Telephony.

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IMPORTANT PROVISIONS SUMMARIZED FROM THE PROPOSED CLAYTON BILL.

Forbids any common carrier to purchase supplies or make contracts for construction or maintenance to the amount of $50,000 or more for any one year, where the two have interlocking directors, except upon competitive bidding.

Makes it unlawful to prevent, or attempt to prevent, anyone from bidding.

Makes it the duty of the carrier to report the transaction of the purchase with all particulars to the Interstate Commerce Commission.

If the commission finds a transaction to be in violation of the law, it shall report the same to the Attorney General.

Every director and other officer of the carrier taking part in any transaction in violation of this section is made personally liable.

Gives the person holding position of director in two or more corporations one year within which to sever his connection with all but one, without liability.

Interstate Commerce Commission and Federal Trade Commission are authorized to enforce the law.

Gives private individuals the right to sue and have injunctive relief in the federal courts.

Modern Utility Managers Leaders of Leaders.

The author of the articles which are appearing in Telephony relative to "Public Relations of Utilities in Theory and Practice," has hesitated about offering the line of suggestions which appears in this issue. This is not due to any doubt in his own mind, but because of the possibility that he might fail to keep free from the suspicion that he was defending that class which he calls utility malefactors. It is also because he might not give sufficient evidence of the fact that he has no grouch against those to whom he refers as welfare workers or up-lifters.

To the idea that "the common good is master and a wise servant always seeks his master's benefit," the thought is added that, after the utility manager has surrendered to the "mastership" of the common good, he must lead public sentiment to demand a like surrender on the part of other business men. In order to continue in his position the utility leader must, as a matter of self-protection, turn on light enough to enable the average man to see without difficulty the difference between the individual whose purpose and practice benefits the public and the individual whose purpose and practice does not benefit the public. He must show clearly the difference between every undertaking or activity that is beneficial for the common good and those that are not.

Many public utility managers have not realized that public sentiment is what it is largely in consequence of the influence of preachers, teachers, editors, political agitators and the leaders of wage-seekers. They have not appreciated that the very title to public utility property, as well as the privilege of continued leadership or management of utility business, is affected largely by the influence which these people bring to bear upon the rising generation. Perhaps we all need to consider more seriously this matter of the influence which the churches, the schools, the political and the industrial agitators of our day will have upon the ownership and the management of utilities in the year 1920 or 1925.

There was a time when the leaders of business did not appear to deem it necessary to deny the declaration in which they were quoted as saying it was "easy to buy legislation."

But the rules of the game have changed. If important organized business undertakings were once all-powerful in legislation, it must be admitted that when wage-seekers and farmers are exempted by the congress of the United States from the laws which are being enacted for the restriction of other classes, public sentiment is in control.

The questions for the utility manager to answer, therefore, are: "Shall I give up? Shall I stop trying to have anything to do with the forces which control my business? Or shall I undertake to be a leader of those now leading public sentiment?"

Reliability and Other Abilities

By HERBERT KAUFMAN

When every other ability fails you, take a try at reliability.

Quite a goodly lot of scientists insist that your grandfather should be held to account for your slow wit, your dearth of imagination, or lack of vision, but nobody wants to blame him because you are untrustworthy.

Ever since first class dogs have been setting examples in fidelity, mankind refuses to condone certain forms of irresponsibility.

It happens that genius is a birthright—you can't learn to be brilliant, nor be taught inspiration. No amount of midnight oil, nor degree of daylight toil, can sharpen a commonplace mind to a mental rapier.

Some attributes are natal endowments. The hare is born swift, the tortoise deliberate. The snail can't, in a million generations, increase his pace sufficiently to gain a reputation for speed, but he can always keep going straight ahead.

The sprinter's fleetness is given to few, but a steady walker can usually manage to reach any reasonable destination. The high-strung, nervous temperaments, which seem essential to daring and dazzling performances, are usually incompetent of sustained effort.

Talent is essential to many sorts of undertakings, but tenacity is equally necessary to success.

While the Titans tossed up their mountain ranges over night, the microscopic polyps have managed to do very well, thank you, in an eon or so of persistent reef building.

Utilize your strength to its utmost, and if trustworthiness is your most marketable asset, value its virtue at true worth. It's a scarce quality—the demand for which exceeds the known supply.

Somebody, somewhere, is constantly seeking a dependable man, and willing to pay high for the certainty of efficient assistance.

There isn't an organization of any size that hasn't a vacancy ready for a sure-fire man—a close-mouthed, honest plodder, with an acute memory and a hair-trigger forgettery—a man with a timelock on his mouth, who won't talk after hours, and won't "open up," except to the man who sets the combination.

Stability is essential to both a safe and a safekeeper, and employes who can't be "burglarized" of their employer's secrets by the inducements of unscrupulous competitors, are afforded opportunities to advance which are rarely open to weak-willed, though brighter associates.

There is a living for every man on earth, and failure to prosper usually lies in the mis-marketing of one's self. Round pegs and square holes both have their uses, even if not in the same place.

Lots of us fall short, not because we are unfit, but because we don't fit.

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Accounting for the Telepone Plant Department

Description of a Practical System for Operatng Companies for Keeping a Record of Time and Material—Divisions of the Exchange Plant for Accounting Purposes—Work Orders and Daily Work Reports—The Credit and Material Record

By Wm. Geckler, Jr.

It has been the writer's experience that many operating companies do not keep any record of their material as it is received or disbursed, nor upon what class of work the material is used, with the result that there is no means at hand from which to learn the cost of doing different classes of work. All operating companies equip themselves with some form of subscriber's record and other records in which to record the earnings and expenses of the company, but material is used up haphazard, with absolutely no record to show upon what class of work it was used or from what recovered. Nor is there any record kept of the various employes, with the result that on pay day there is no means of learning whether the employes' time should be charged to the installation, the repairs of subscribers' stations, or both.

It is just as necessary to keep an accurate record of time and material as it is to record the receipts and expenditures of an operating company. The reason given for the absence of such records generally is that "too much red tape is involved." This may be true in some instances; that is, some companies over-systematize. However, some system is required. It is the object of this article to present a system simple in operation, yet of sufficient detail to bring about the required results.

For convenience, the outside plant may be divided into the following divisions and routine numbers applied:

Routine No.	Class of Plant.
1	Underground conduit.
2	Underground cable.
3	Submarine cable.
4	Aerial cable.
5	Pole lines.
6	Aerial wire.
7	Subscriber's station apparatus.
8	Subscriber's station installation.
9	Subscriber's station drop wires.
10	Central office equipment.
11	Central office furniture.
12	General office furniture.
13	Interior block wires.
14	Private branch exchanges.
15	Booths and special fittings.
16	Exchange buildings.

To these routine numbers a sub-letter or code may be added to indicate whether construction, repairs or changes were involved. The following code may be used to represent the different classes of work: *C*—Construction; *X*—Removal; *M*—Maintenance or repairs; *R*—Re-arrangements or changes; and *T*—Toll.

It therefore follows that where exchange pole lines are constructed, the time and material would be reported under 5-*C*, and toll pole lines would be reported under 5-*TC*. Aerial exchange wire construction would be classified under 6-*C*, while toll wire construction would be classified under 6-*TC*. Replacing a 50-pair aerial cable with a 150-pair aerial cable would be classified under 4-*C* and 4-*X*, the plant being charged with the 150-pair cable under 4-*C* and credited with the 50-pair cable under 4-*X*. The time charge in every case is charged, and not credited, to plant.

All repairs are classified under *M* for exchange repairs, and *TM* for toll repairs. The letter *R* may be used for reporting time in making re-arrangements and changes in subscriber's station equipment, the material used or recovered being handled under the *C* and *X* codes with the proper routine number.

For convenience and ready reference the routine and code numbers may be arranged in table form as follows:

Routine No.	Class of Plant.	Construction		Removal		Maintenance		Re-ar. and Chgs.
		Exch.	Toll.	Exch.	Toll.	Exch.	Toll.	Exch.
1	Underground conduit.	1-C	1-TC	1-X	1-TX	1-M	1-TM	
2	Underground cable...	2-C	2-TC	2-X	2-TX	2-M	2-TM	
3	Submarine cable.....	3-C	3-TC	3-X	3-TX	3-M	3-TM	
4	Aerial cable	4-C	4-TC	4-X	4-TX	4-M	4-TM	
5	Pole lines	5-C	5-TC	5-X	5-TX	5-M	5-TM	
6	Aerial wire	6-C	6-TC	6-X	6-TX	6-M	6-TM	
7	Subscriber's station apparatus	7-C		7-X		7-M		7-R
8	Subscriber's station installation	8-C		8-X		8-M		
9	Subscriber's station drop wire	9-C		9-X		9-M		9-R
10	Central office equipment	10-C		10-X		10-M		
11	Central office furniture	11-C		11-X		11-M		
12	General office furniture	12-C		12-X		12-M		
13	Interior block wires..	13-C		13-X		14-M		13-R
14	Private bank exchanges	14-C		14-X		14-M		14-R
15	Booths and special fittings	15-C		15-X		15-M		15-R
16	Exchange buildings...	16-C		16-X		16-M		16-R

This routine may be followed for any number of divisions, including right of way, house service, tools, shops and expense, stable and garage, engineering, supervision, canvassing,

Corner of the Equipment Storeroom Stock Arrangement.

collecting, accounting, operating, etc., with sub-accounts for the various classes of work and expenses of each department. The subject of this article being plant accounting, only the divisions of the exchange plant affected by general labor and the handling of material will be touched upon.

In order to bring about effective accounting, all work performed, should be done under some form of work order. Minor repairs and adjustments to plant necessary to keep the

plant in good working condition, may be handled in the regular repair routine, but all work of a major nature in which material may be involved, should be covered by a work order in every instance. Such a form may be termed a "miscellaneous work order" to distinguish it from the regular install, removal and change or more order forms.

All work orders should be issued in numerical order be-

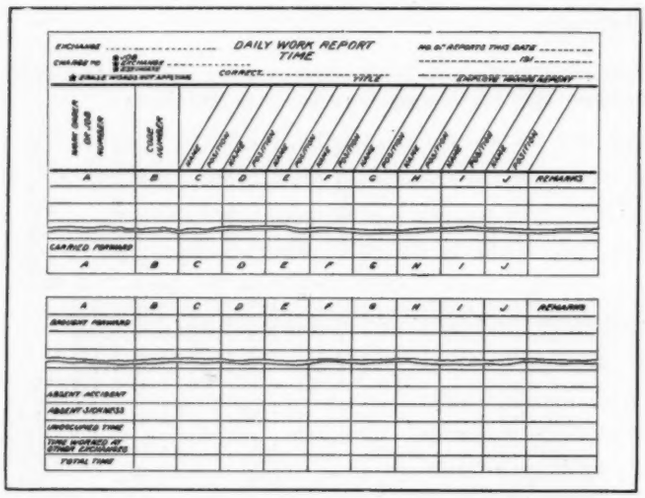


Fig. 1. Front and Back of Time Sheet, Daily Work Report.

tween certain periods. Some exchanges can run the series for a year without the numbers getting too high while others may be required to begin a new series semi-annually or quarterly. Every number of the series should be accounted for. There should be no missing numbers in the series when work orders are filed under each class for future record. Install orders should have the prefix "I" placed on each order. Removal orders should have the prefix "O", and change orders the prefix "C", while miscellaneous orders should be given the prefix "M". The prefixes should be noted with the order number when making reports on the Daily Work Report, the use of which is explained below.

Daily Work Reports.

The daily work reports involve a time report, a form of requisition, and a credit form. One of each of these forms is used in every working unit. A working unit may be the

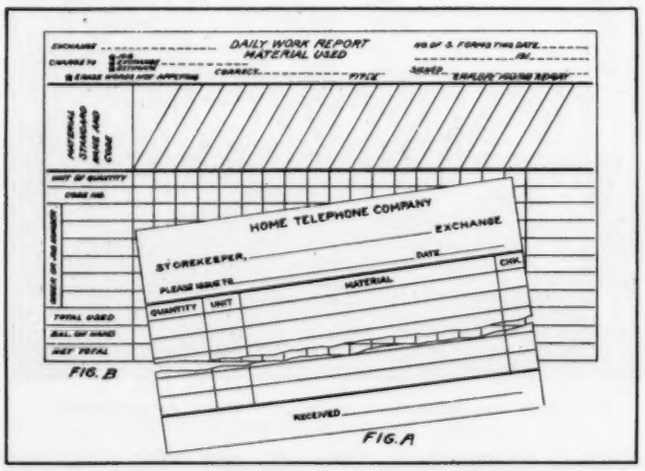


Fig. 2. Material Requisition and Form for "Material Used."

wire chief and his repairmen, a cable repairman and helper, a drop or line order crew and wagon, or a construction crew and wagon. The forms are all printed 5¼ ins. by 8¼ ins. in size. The time sheet is printed on yellow paper, the requisition on white paper and the credit form on pink paper, thereby easily distinguished one from the other. In order to explain the use of the different forms, each one will be considered.

The "Time Sheet" (Fig. 1) should be filled out as follows:

Exchange: Show here the name of the exchange to which the employe is authorized.

Charge to: Show here to which exchange, job or estimate the employe's time is to be charged.

Correct: To be signed by the department head in charge of and responsible for the work done.

Number of reports this date: Note here the number of time reports involved this date, for the exchange charged.

Date: The report should be dated for the date involved, and signed by the employe in charge of the crew as employe making the report.

Column A: Show the work order, job or estimate number for which labor was involved.

Column B: Show the routine code number for the class of work involved on each order.

Column C to J: Show the name and position of each employe of the crew with the time involved on the different code numbers and work orders.

The time is totalled and carried forward to the back of the form (Fig. 1) and shown as total time at the bottom of the form. Space is provided for reporting employes absent on account of sickness or accident, for unoccupied time, also for time working at other exchanges. The "remarks" column may be used for making notations explaining cause of accident or unoccupied time. When an employe works at an exchange other than the one for which he is authorized, a separate

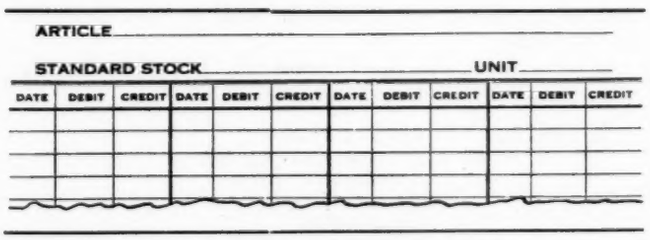


Fig. 3. Form for Stock Record Card.

time sheet will be made by him for the exchange at which he is at work and the total number of time reports for the exchange will be shown in "Number of Reports" this date.

The "Requisition and Material Used" form (Figs. 2 and 3) is printed in duplicate. The face of the form is a requisition for material on the storekeeper. On the back of the original form appears blanks for a report of material used. The back of the duplicate sheet is blank, and this part is used by the stockman only. The head of the "material used" form is filled in in a similar manner to the time sheet, except the "No. of S. forms" is referred to in the upper right hand corner. This refers to a supplementary form, similar to the material used report, to cover an overflow of items involved on the same work reported on the original material used report. This may occur, due to the fact that similar materials may be used under different code numbers.

In the use of a material accounting system, it is essential to standardize in the names of all material. The stock ledger clerk knows names only and cannot differentiate between different kinds of material. If a ⅝-in. x 12-in. machine bolt is to be called a 12-in. cross arm bolt, it should be called that always. It should not at times be called a 12-in. through bolt. There should be standardization on the unit of quantity in feet or pounds. If the wire standard is feet and pounds of wire are received, the conversion table should be used to convert the pounds into feet. There should be shown the materials used in unit of quantity under standard name and proper code number for which it was used.

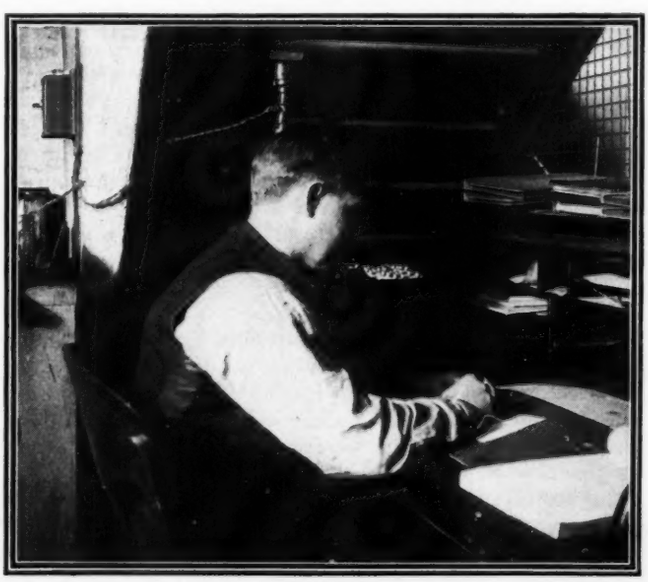
The total should be carried down and to that the balance of

material on hand be added, resulting in a net total of the material drawn on the face of the report. This automatically balances the material report daily. The material shown as balance on hand should be returned to the storekeeper on the material credit form, or it may be reported on a material credit form and held to be included as a part of the next day's requisition. The material of each crew should be checked to the storekeeper at the close of every week.

The "Credit and Material Record" form is also printed in duplicate, the face of the form being a material credit report to the storekeeper. It is similar to the requisition form, Fig. 2, except the words "Please issue to," are changed to "Please credit." Another column headed "G, J or W" has been added, being placed on the form at the right of the "Material" column. On the back of the first or original sheet of the form are printed blanks for the "material recovered" report. This is quite similar to the "material used" form, Fig. 3, the only difference being the substitution of the word "recovered" for the word "used." Any material recovered from plant is shown under its standard name and the code for which the material is recovered. To this is added the balance of requisitioned material on hand. The totals are entered on the face of the form to be received into stock by the storekeeper, each item being classified as good, junk or worthless by the letters *G*, *J* or *W*.

The "material used" or "material recovered" reports are handled by the plant accounting clerk and the "requisition" and "credit" forms are handled by the storekeeper.

The stock record cards (Fig. 4) are printed on both sides, in size 5¼ ins. x 8¼ ins. For better service, printing on each side is done from opposite ends in order to bring up a new edge when the card is turned. A card is made for each article used, and should show the standard stock, which represents a fair average of the amount of the article that will be turned over each month. The "unit" should show the unit of quantity, either feet, pounds or each, as the case may be. Debit and credit entries are made each day from the requisition and credit forms by the storekeeper. All new material received is debited, and material shipped, or sold, is credited. The

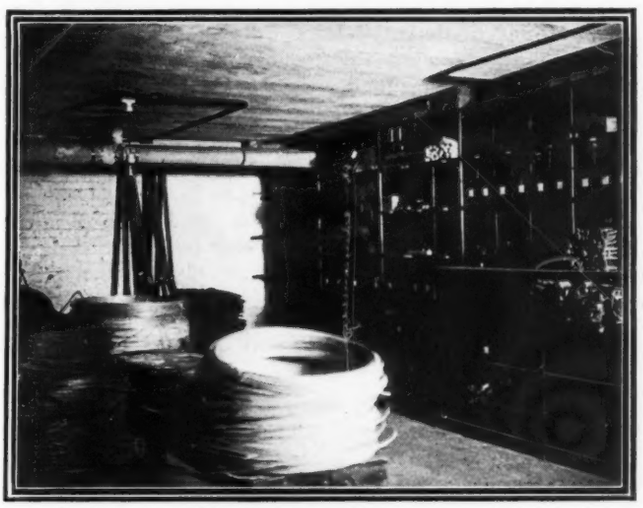


Storekeeper Posting Cards from Requisition and Credit Forms.

cards are balanced off each month, the balances indicating an invoice of the stock on hand.

The use of these cards, readily shows if one is overstocked. It can be seen at a glance what materials are moving daily without going through the stock bins and shelves and the storekeeper will be able to tell in ample time what particular items are running low, so that it will not be necessary to hold up work waiting for the arrival of stock, work that if completed would be earning a revenue. The sheet metal shelves, bins and drawers shown in the accompanying illustrations were furnished by the Lyons Metallic Mfg. Co.

The view of the storekeeper's corner shows him engaged in posting the stock cards from the daily requisition and credit forms. The stock cards are kept in the case at his left, ar-



Corner of Construction Storeroom.

ranged in two sets with alphabetical indexes, one for construction material, the other for equipment material.

Another view shows a corner of the equipment storeroom, in which the small parts are arranged in drawers of different sizes, while the instruments and the more bulky stock are placed on the shelves.

A third view shows a corner of the construction material storeroom. All construction hardware is contained in suitably arranged shelves and bins. The wire is placed on racks or standards to keep it clear and off the floor. The general arrangement is with a view of having "a place for everything and everything in its place."

The Telephone at the Panama Exposition.

A clearing house for lost children, lost friends, and relatives at the Panama-Pacific International Exposition has been provided for by the officials. It will consist of a central registration bureau in communication with scores of telephones over the grounds as well as the entire San Francisco system of the Pacific Telephone & Telegraph Co.

Prosperity of Rochester Telephone Co.

At the recent meeting of the board of directors of the Rochester Telephone Co., of Rochester, N. Y., the fiscal report for six months ending June 30, was presented, indicating a marked increase in gross and net earnings in the face of reduced expenses. The following digest of some of the figures presented makes comparison with the same period of 1913:

Gross revenue for 1914 period, $241,102, as against $228,375 for the 1913 period, indicating a gain in revenues during the current period of $12,728; operating expenses 1914 period, $143,432, as against $154,833 for 1913 period, showing a decrease during the current year of $15,149 in operating expenses; net operating income for 1914 period, $97,670, as against $73,541 for the 1913 period, showing an increase in net income during the current year of $22,904; bond interest for 1914 period, $26,766, as against $26,798 for 1913 period, showing a decrease for the current period in bond interest of $4,517; net earnings for 1914 period, $70,904, as against $46,743, showing a gain in net earnings during the current period of $24,161.

Dog Days

Europe's Plight—Rich Man's Panic—The Financial Chain

By J. C. Kelsey

It is dog days in Europe. The dogs of war are unleashed, and their bark may be even now heard at the gates of some of the capitals of Europe.

No one knows what the trouble is about, but three rulers seem to hold the destiny of Europe within their grasp.

Strange to say, these three nations are practical despotisms—the last of their kind.

One hundred years ago Napoleon meditated on the Isle of St. Helena. Naturally he was full of post mortems and predictions. He still had in mind that terrible retreat from Moscow—for which no one was to blame but Napoleon himself. He basked in royalty's smile at Berlin while every soldier he had knew that dread winter was creeping in.

It was winter, not Russia, that defeated Napoleon. Russia has apparently never won a victory.

Any way he had a profound respect for the power of Russia. He predicted that a cycle of 100 years would find Europe in the hands of the Cossacks, or that Europe would humble Russia into the dust.

Today we are at the end of that century. Germany is reaching out for St. Petersburg—and without question the problem is whether Europe or Cossack shall prevail.

Russia today is accused of encouraging the pitiful Servian nation to affront Austria.

One part of Napoleon's prophecy is true. Europe has been frightened into savagery. Every part and parcel of its territory is mobilizing troops.

No one seems to know who the real enemy is—they are simply preparing to run amuck.

Savings banks and every depository have been surrounded for days. Everything salable has been thrown on the market at any price.

The shadow of the Cossack surely is not repudiating Napoleon's judgment.

It will cost Europe $55,000,000 a day to carry on this war.

A table that has been prepared shows it would cost one million dollars a day for horse feed alone. It would cost $12,500,000 to feed the troops, and an equal amount of taxes would be lost because men at the front cannot help to pay for a government's folly. If the war lasted even one year, the expense would reach twenty billion dollars.

Think of the stupendous folly! One year's fighting would build and equip every railway in the United States today.

Practically one month's fighting would completely equip the Pennsylvania Railroad, and 18 days' fighting would pay the entire cost of reproducing the Bell Telephone company.

In spite of the horror in Europe, the effect on the United States industrially is little or nothing.

It does mean loss in gold, and several brokers have gone down to ruin who should have departed in 1908. And it has hit holders of listed securities an awful blow; in other words, it is a rich man's panic.

Not a poor man will suffer. No job will be lost. No wages will be cut. But the holder of stocks will be on the wrong side of the ledger for some time to come.

For a time, the New York Stock Exchange was the only trading center in the world. Europeans dumped their stocks on the American market, and they were eagerly picked up by the bargain hunters.

But there came a deluge. Five income producing stocks were hurled into the pit, and there were no takers. Prices went clear down to nothing. Ruin stared banker, broker and seller in the face.

So they closed the New York Stock Exchange; in other words, stock dealing went into a general holiday—for a long one, too—to lay off until matters are adjusted or at least until Europe gets back to its senses. Then they went farther and discussed the possibility of putting out clearing house certificates.

Really, New York was in the storm cellar, too.

This isn't the first time the Stock Exchange was closed. Jay Cooke & Co. failed in 1873 and 71 other stock exchange failures followed, showing how necessary it is that each link in a financial chain must be sound.

All credit was shaken. No one would buy stocks at any price. Collateral was neutralized. So they stopped short so that everyone could get their breath and begin over.

It is a pity that the federal reserve bank is not ready. A great opportunity is offered for America to show that it could finance the entire world.

Today the treasury holds one and a half billion dollars in gold and silver. There are $130,000,000 of free gold and $150,000,000 in the gold reserve. With the $500,000,000 emergency currency turned loose, America is certainly in an enviable position.

In 1907, we had a great money panic. But throughout all the trouble, it was agreed that letters of credit of foreigners should be taken care of. No foreigner was allowed to starve to death with bales of drafts and credit letters.

But the situation in Europe is vastly different. There are 200,000 Americans in Europe, and not one of them can get any cash. So great is the fear of the European banks that they will not pay out a dollar.

It seems a great deal like our 1907 period when you had hard work to pry even ten dollars out of your own bank.

Worse and more of it! The American tourists cannot come home, as anxious as they are to do so. All the big boats have been impressed into auxiliary service by the European governments. No one can come home until the war scare is over or the United States government sends for them.

August surely is dog days' time, not only for the rich man who holds stock, but for the tourist who is well enough off to travel in Europe. Never has thrift, or maybe extravagance, received so many hard jolts.

It is foolish to think that a war in Europe will help America. Great wholesale waste and destruction must be paid for by the civilized world.

Europe will pay a large percentage of her war bill, but we have losses to pay for too.

We are having practical examples. Exporters in wheat have discovered that we have lost a customer instead of

gaining one. They cannot get insurance on cargoes, and if matters grow worse, nothing can be shipped at all.

You know how quickly our Mexican trade was killed by that relatively small trouble there. Think of trying to ship something to Germany with the English and French fleets looking out for you.

America will have to absorb its own crop surplus. We can't ship horses, mules or meat.

We might as well take Andrew Carnegie's advice—he is right about peace. As long as we had peace in Europe, they bought our securities. As long as they bought, our financial men smiled through their tears. As long as they bought, our securities had a certain market value, and the money, used to carry on business, was borrowed with these securities as collateral at European buying prices.

City banks live upon stock exchanges. Most any average Chicago broker borrows close to the million. The big New York houses borrow up in the magic millions. They put up stock as collateral for the loan, and they borrow as much money on the stock as the market value justifies.

Suppose you buy 100 shares of telephone stock through your broker. The telephone stock is worth $120 a share because people will pay that much money for it. It is only worth as much as a buyer will pay when it is offered for sale.

You pay down, to your broker, $20 a share, or $2,000. He takes the stock to the bank, borrows $10,000, pays 4 per cent, charges you 5 per cent and thereby makes his living. The bank likes this kind of business, so everyone is happy.

War talk began in Europe. Europeans began selling stock because they needed the cash. Their brokers offered telephone stock at 120 or the market price which you paid. On account of the conditions in Europe you don't want to buy any more stock because you know things are going to be unsettled.

The broker begins to get desperate and he offers telephone stock at $100. Your own broker has gone to the bank and borrowed $100 for you on each share of that stock. The bank asks him for $20 more per share and he, of course, passes it on to you.

You must find $2,000 cash right quick or the broker-banker combination will throw your stock on the market. That's the rule.

But things got worse in Europe. Great blocks of stock were offered, and telephone stock—as all others—goes down, down and down.

By this time you face ruin. The broker faces ruin and so does the banker. So the stock exchange gets busy and everyone goes on a financial holiday.

You have been saved. Your broker has been saved and so has your banker.

Once in your life, you are saved by the company you keep. Simply because the banker, broker and yourself could not escape loss. Fine isn't it?

New York banks saw it first. The decline in values of collateral soon passed the loans. To call former margins from borrowers meant more panicky effort to sell at any price. So with exchanges closed, the values of collateral behind the loans are held stationary.

So you see it is still an imaginary condition. But everybody agrees to refrain from pushing on the house of cards until it seems safe.

One might say that only the speculator in stocks is in danger. That the man who buys his securities outright is not a sufferer. The fact is, that everyone is in great danger.

The trouble begins with the marginal buyer. If the marginal buyer cannot come to the broker's relief with more money, then the broker fails. If enough brokers fail, then the bank is in danger of closing its doors.

When the bank closes its doors, the sorrow and suffering extends from the largest depositor to the poorest one, and many a business house goes to ruin.

Gambling and speculating start the trouble, but the stack of cards which unconsciously lean on this activity, is long and practically endless.

It is a good thing that the stock exchange closed—even for you and I, and all in other walks of life. For the world has grown together and we face an entirely new economic condition.

In face of this new condition, war must die, armaments must rust, and military valor be a memory of the folly of man.

No one knows what it is all about. Three monarchs have it all in their hands. Three men who have the right of life or death of their subjects. Three institutions which practically stand alone out of the pit of the dark ages.

It looks as if it were the dying struggle of monarchy—the last kick of the absolute human ruler and the beginning of an era of republican rule.

No republic or constitutional monarchy is doing anything but defensive work. Just as in a general conflagration, each man must keep the sparks and firebrands from his own roof.

How much better does England, France and America stand? All the finance of the world centers in these three countries where citizenship means freedom.

It surely means that the destruction of anything but republican or constitutional governments is an economic necessity. It means that the cost of maintaining the old show of divinity and absolutism is too great.

This is not Thanksgiving week, but every week should be one that we are in America. We should feel glad indeed that we are in the telephone business and that our little irritations are nothing compared to those of other countries.

We should even smile at the threat of government ownership, or of a monopoly. Or at any order, a state commission might give. And by all means, do not keep subscribers on your waiting list. Give them service at once—and everyone will feel the quickening.

Throughout all this panic talk, the telephone has gone its serene way. In spite of losses of 20 to 50 points in some industrial and railway stocks, there has been little or nothing relatively in American Telephone.

The losses, for instance, in Amalgamated Copper, have been $123,000,000; Canadian Pacific lost $72,000,000 in value, and even General Electric fell off $10,000,000 worth—something like $10 a share.

As the world wags on, it comes nearer to recognition of the sterling value of the telephone. It does not afford an exciting living, and it may not let us deal in listed stocks or spend the summer in Europe. It keeps us at home pretty well, and makes us good, useful citizens.

We can't all be stock brokers—and it should be no disappointment to be barred from a rich man's panic. There are no dog days in the telephone business.

MORAL: We live on a small planet.

The London-Birmingham-Liverpool Telephone Cable

Description of 200-Mile Underground Loaded Cable Recently Installed in England—Methods of Inserting Loading Coils, with Data Relative to the Coils and Loops—Published by Permission of Post Office Electrical Engineers' Journal

By W. J. Hilyer

In consequence of the great growth of telephone traffic between London, Birmingham, and Liverpool, together with the increasing difficulties encountered in obtaining satisfactory routes for new pole lines for long aerial trunks, it has become necessary to provide an underground telephone

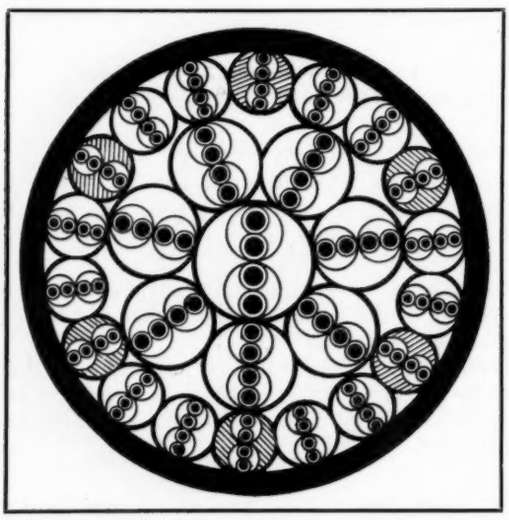


Fig. 1. Cross Section of Cable.

channel connecting the three cities. The publication at this stage of a few particulars relating to the scheme will probably be of interest.

Stoneware multi-way ducts of 3⅜ in. internal diameter are being used to form the conduits. The number of ducts laid down for trunk purposes in the different sections varies from two to six. At ordinary cable-jointing points—normally 176 yards apart—the scheme provides for F 2 manholes in the six-way section of the route, F 1 manholes in the four-way section, and cast iron couplings (excepting through towns, where double junction boxes or carriageway jointing chambers are required) in the two and three-way sections.

At the points 2½ miles apart, where loading coils will be inserted, F 8 and C 8 special manholes are provided between London and Birmingham, and F 1 and C 1 manholes between Birmingham and Liverpool.

The interior dimensions of the manholes named above are as follows:

Type of Manhole.	Length, ft. in.	Breadth, ft. in.	Height, ft. in.
F 1	4 3½	3 0	3 0 or 4 0
F 2	4 3½	3 6	5 0
F 8 (special)	8 0	5 6	6 0
C 1	4 0	3 0	4 0
C 8 (special)	7 0	7 0	6 0

The route length between London and Birmingham is 110½ miles, and between Birmingham and Liverpool 90 miles.

In designing the cable the end in view was to obtain such grades of efficiency as would provide for the following classes of connection:

a. Communication between the telephone areas of the three towns.

b. Communication between the zones of which the towns are zone centres.

c. Long distance communication, i. e., communication between places involving longer trains of connections than those considered under the two preceding cases.

The air space, paper core, cable ultimately determined upon contains two 300-lb., 14 200-lb., 12 150-lb. and 24 100-lb. loops made up in multiple twin four-wire core formation. A diagram showing the section of the cable is given in Fig. 1. The center core is made up of 300-lb. conductors; the first layer of 200-lb. conductors; and the second layer of 150-lb. conductors (hatched) and 150-lb. conductors. The theoretical electrical constants of the circuits are given in Table No. 1.

All the loops will be loaded at the outset, as will also 12 superposed circuits formed on 150-lb. and 200-lb. four-wire cores.

At each loading point the following iron core type coils will be inserted: 50 type 535 for the 100, 150, and 200-lb. circuits; two type 545 for the 300-lb. circuits; and 12 type 536 for the superposed circuits—all of the coils will be contained in one cast iron case. A dimensioned drawing of one of the cases of coils is given in Fig. 2. Electrical data relating to the coils are given in Table No. II.

The "leading-out" conductors (for connecting the coils to the main cable) are to be paper insulated and impregnated, and are contained in two separate cable stubs; one of these will be connected to the "up" side of the main cable and the other to the "down" side. The necessary

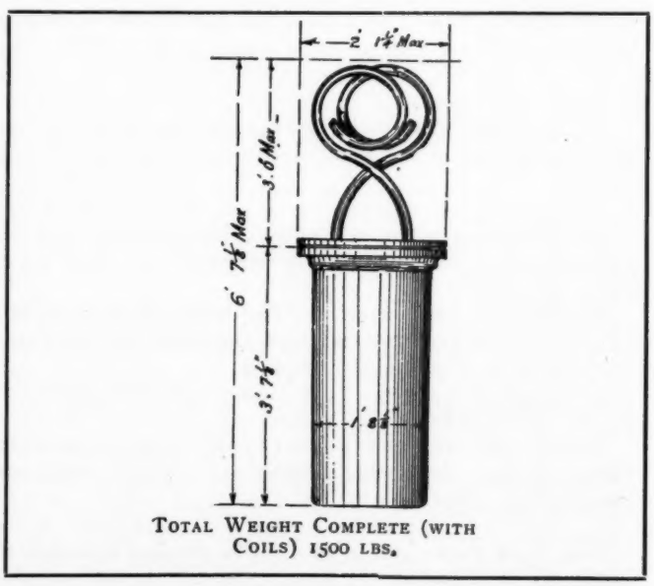


Fig. 2. Loading Coil Case.

connection between the side and phantom circuit coils will be made within the case. The paper coverings insulating the leading-out conductors will be colored; the color scheme for the cable stubs provides for the identification of the type of coil connected to any pair, and also for the identi-

fication of those four-wire cores in connection with the superposed circuit coils.

The two windings of any coil of types 535 and 545 will be led out on the one side by means of a pair in the one

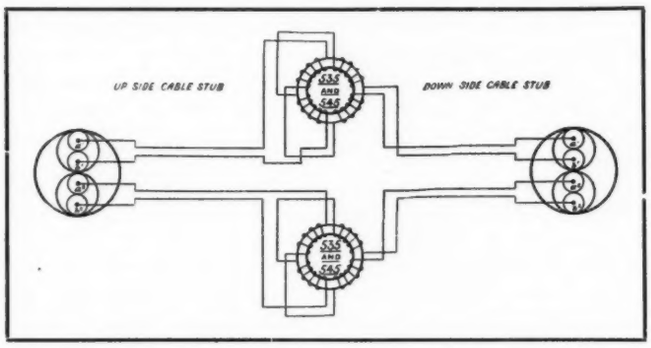


Fig. 3. Windings and Connections for Ordinary Circuits.

cable stub, and on the other side by means of a pair in the other stub.

Each pair of coils 535 and 545 (and in 12 instances a pair of coil 535 plus a coil 536), which will be inserted in a four-wire core in the main cable, will be led out on the one side by a four-wire core in the one stub, and on the

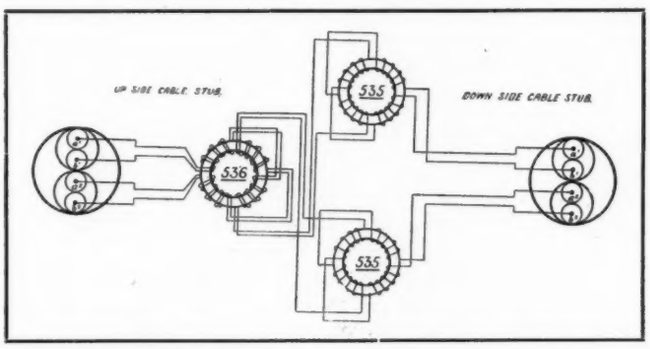


Fig. 4. Connections for Side and Superposed Circuits.

other side by a four-wire core in the other stub. The same color scheme is to be used for the two stubs, and a pair or core of wires of any particular color in one stub, will be connected through a coil or pair of coils in the case to another similarly colored pair or core of wires in the other stub.

In Fig. 3 is shown in diagrammatic form the windings of coils of types 535 and 545 and the manner in which these windings are connected to the conductors in the cable stubs. Fig. 4 shows similarly coils of types 535 and 536 connected to form a complete side and superposed circuit unit. It will be seen that in this unit, the coils 535 act inductively for currents passing round the side circuits to which they are respectively connected, while coil 536 acts non-inductively for such currents; also that coil 536 acts inductively and coils 535 non-inductively for currents pass-

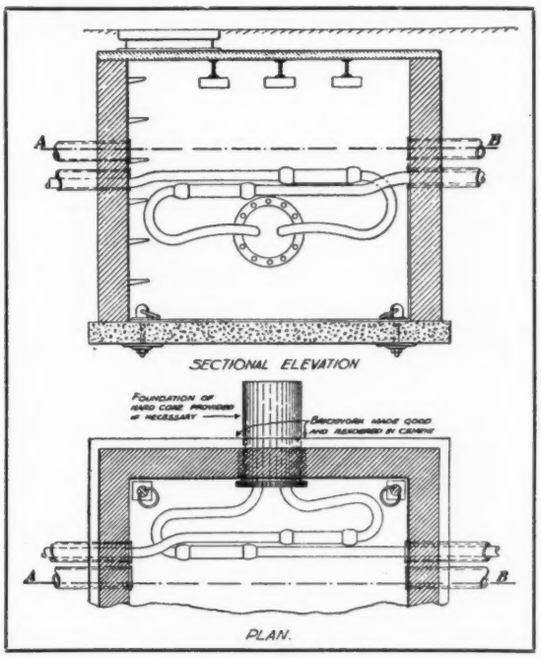


Fig. 5. Loading Coil in Position with Connections Made.

ing round the superposed circuit. The coils are wound in sections on the iron cores as indicated in order to prevent as far as possible energy losses and cross talk.

In order to prevent cross talk between superposed and side circuits, special precautions will be taken to join together such wires and pairs in successive lengths as will secure the electrical balance of the two wires of a side circuit or of the two pairs of a superposed circuit.

The cases of the loading coils will not be placed in the manholes at the loading points, but will be buried horizontally in the ground with the flange of the case and the connecting cable stubs projecting through the wall of the

Weight per mile lbs. (single wire).	Steady current values. Line resistance, ohms per mile loop.	Wire-to-wire capacity. Mfds. per mile.*	Values when $2\pi n = 5000$. Inductance henries per mile.	Attenuation constant per mile.	Wave-length (miles).	Characteristic impedance.	Equated length (standard miles) of section. London–B'gham.	B'gham.–L'pool.	London–L'pool.
100	17·56	·065	·055	·01161	21	$922/2^\circ$	12·1	9·9	22·0
150	11·71	·070	·055	·00875	20·2	$886/1^\circ\ 23'$	9·1	7·4	16·5
150 (superposed)	5·85	·100	·034	·00759	21·5	$583/1^\circ\ 15'$	7·9	6·4	14·3
200	8·78	·065	·055	00684	21	$920/1^\circ\ 5'$	7·1	5·8	12·9
200 (superposed)	4·39	·090	·034	·00601	22·7	$615/1^\circ\ 1'$	6·3	5·1	11·4
300	5·85	·065	·055	·00480	21	$920/0^\circ\ 42'$	5·0	4·1	9·1

* Pair-to-pair in the case of superposed circuits.
The insulation resistance between any wire and the remaining wires and earth will not be less than 5000 Ω per mile.
The ratio S/K (leakance/capacity) will not exceed 20 when $2\pi n = 5000$.

Table No. 1. Data Relative to Loaded Loops.

manhole. Fig. 5 shows a coil case in position. At each end of the 2½-mile sections, air nozzles will be provided in the main cable for desiccating purposes.

As indicated above, the loading spaces are 2½ miles with half spaces at the London and Liverpool ends and on either side of Birmingham.

Table No. I shows in addition to the electrical constants

Type of coil.	Windings in series: Inductance (henries)	Windings in series: Maximum effective resistance at 800 p.p.s. (ohms).	Windings in series: Maximum ohmic resistance	Maximum electrostatic capacity between windings (mfds.).	Minimum insulation resistance (megohms.)
535	135	6 75	3 4	0035	1000
536	082	4 10	2 0	0007	1000
545	135	4·72	2·6	0035	1000

The insulation resistance is measured with 100 volts direct between any one winding and all the other windings and the containing case In this Table the term "winding" includes the leading-out conductors in the cable stubs

Table No. 2. Electrical Data Relating to Loading Coils.

of the lines the equated lengths for the different gauges. These are such that the services referred to previously are provided by the conductors indicated below:

		Conductors
Service (*a*)	Between London and Birmingham	100 lbs.
	Between Birmingham and Liverpool	
	Between London and Liverpool	150 lbs. superposed and 200 lbs.
Service (*b*)	Between London and Birmingham	150 lbs.
	Between Birmingham and Liverpool	100 lbs.
	Between London and Liverpool	200 lbs. superposed
Service (*c*)	Between London and Birmingham	200 lbs.
	Between Birmingham and Liverpool	150 lbs. superposed and 200 lbs.
	Between London and Liverpool	300 lbs.

The cable will not be led into any office or testing point between London and Birmingham or between Birmingham and Liverpool.

When completed, the London-Liverpool circuits will be among the longest of the loaded subterranean telephone lines of the world, and the 300-lb. circuits will be unique in the fact that the conductors are heavier than those of any subterranean telephone lines hitherto laid in Great Britain.

Convention of Eastern Pennsylvania Association.

The fifth quarterly meeting of the Eastern Pennsylvania Independent Telephone Association held at Columbia, Pa., on July 28 and 29, was pronounced one of the best ever held by the association. In the absence of President Henry M. Tracy, of Philadelphia, the sessions were presided over by Mrs. Esther F. Young, vice-president of the Association and president of the Columbia Telephone Co., this being doubtless the first time in the history of the telephone business that a woman has presided over a convention of telephone men.

A "get-together" meeting was held on Tuesday evening, July 28, at Hotel Columbia after which the visitors became the guests of The Columbia Telephone Co., headed by H. A. Oberdorf, general manager. The visitors, together with the officers and directors of the local company, were then given a moonlight ride on the beautiful Susquehanna River. The boats were decorated with Japanese lanterns and bunting. During the ride the Columbia Mandolin Club rendered music. After the ride the boats were anchored at Big Island and a crab feast and lunch was served by a chef. The outing was greatly enjoyed by all present.

At the business meeting on July 29, an interesting paper on "Toll Traffic" was read by A. J. Ulrich, traffic manager of the Keystone Telephone Co. of Philadelphia.

Addresses were made by W. S. Vivian, of Chicago, secretary of the Independent Telephone Association of America, on "Telephone Accounting"; H. E. Bradley, of Philadelphia, secretary of the Eastern Traffic Association, on "Routing of Toll Business," and by W. G. Underwood, of Chambersburg, editor of Phone Notes, on "Telephone Publicity."

Informal talks were also given by C. A. Carl, general superintendent of the United Telephone & Telegraph Co., of Harrisburg; George B. Rudy, general manager of the York Telephone & Telegraph Co.; A. Paul Rohrman, division manager of the United Telephone & Telegraph Co., of Lancaster, and other delegates. At the conclusion of the business session dinner was served at Hotel Columbia, after which an automobile ride was given the members of the association through the famous Donegal Valley.

A vote of thanks was given the Columbia Telephone Co. for the enjoyable time the members had during their stay in Columbia. General Manager H. A. Oberdorf was congratulated on the fine plant he has in Columbia and also on his management of the entertainment of the visitors.

The Eastern Pennsylvania Independent Association has as its members all of the Independent telephone companies in Eastern Pennsylvania, east of Altoona, and in the states of Delaware and New Jersey. The officers of the association are: President, Henry M. Tracy, Philadelphia; first vice-president, Mrs. Esther F. Young, Columbia; second-vice-president, Harry R. Miller, Myerstown, Pa.; secretary-treasurer, O. K. Kines, Harrisburg, Pa. Executive Committee: Henry M. Tracy, chairman; Edward M. Prisk; J. F. Stockwell; Cameron L. Baer and Charles A. Carl.

Joint Association Meeting at Jamestown, N. Y.

The joint convention of the New York Independent Telephone Association and the Western Pennsylvania Independent Telephone Association was held at Jamestown, N. Y., on July 24 and 25. President K. B. Schottie, of the Western Pennsylvania association, presided. After the reading of the minutes of the previous meeting President Schottie referred to the fact that the Independent company at Pittsburg had been taken from the hands of the receivers, and suggested that the delegates would like to hear from the manager, Richard Hawkey. Mr. Hawkey made a brief but felicitous address, concluding by stating that competition would be maintained at Pittsburgh. The next speaker, J. C. Bousch, of Columbus, Ohio, spoke on the Ohio Independent situation.

E. B. Fisher, president of the Independent Telephone Association of America, was present at the meeting and delivered a characteristic interesting address on "The Past, Present and Future of Independent Telephony." William J. Maddox, of the Home Telephone Co., of Jamestown, also spoke.

While the convention sessions were in progress an operators' school, attended by about 120 operators, was conducted by W. S. Vivian, secretary of the Independent Telephone Association of America, and H. E. Bradley, of Philadelphia. At one of the Saturday sessions the idea of having these schools for operators was heartily endorsed by B. G. Hubbell, president of the Federal Telephone & Telegraph Co. of Buffalo, N. Y. Mr. Hubbell also gave some instructive suggestions as to the marketing of telephone securities. Among the other speakers on Saturday were V. A. Hatch, of Jamestown, who made a brief address on advertising, and Lyon T. Block, who spoke on co-operative indemnity insurance. The principal entertainment feature was a lake trip on Friday evening in a steamer chartered by Manager John H. Wright of the Home Telephone Co., and which was thoroughly enjoyed.

Public Relations of Utilities in Theory and Practice

"The Public Be Benefited!—Persuade the Public It Is Being Benefited!"—The Science of Public Relations, as Yet Nothing More Than an Expression of a Need—The Advancement of the Common Good Is Master of All Endeavors

By Public Relations Engineer

"Why do you not tell us more definitely the details of the thing you have in mind?"

"Why do you not make more clear this thing which you refer to as 'A Science of Public Relations'?"

"How can you hope to overcome that selfishness which, from the beginning, has led every man to look out for himself and the devil take the hindermost?"

These three questions are a sort of crystallization of the inquiries that have been received from the men who have honored us with comments concerning this series of articles. And, at this time, we will consider the points thus suggested by our inquirers. It will be observed that the writer promises to consider—not to answer—the questions.

The reason for this is that in the first place, we do not have as definite nor as detailed a program as must be worked out—eventually. Then again, as stated in one of the early papers, the "Science of Public Relations" is, as yet, more of an expression of the consciousness of a need than a means of supplying that need. President Reynolds of the Continental & Commercial National Bank, of Chicago, said some five or six years ago, that business is groping around in darkness, due to the fact that public sentiment is at variance. In like manner we may say that progress is groping around, having been blinded by the brightness of what appears to be perfect ideals and theories, which, as yet, no man has shown us how to realize or practice in such manner as will feed, house and clothe our hundred millions of people.

Thus far the "Science of Public Relations" is nothing more than an expressed realization of a need; but, insignificant as that seems to be, it is so valuable and so necessary to the further progress of civilization that it will grow. It will grow regardless of all that you or I may do either for or against it. It is recorded, in the most authentic history that has been given us, of the Perfect Man, that he "learned obedience by the things he suffered"—learned by the experiences which he was permitted, by a wise and appreciative heavenly father, to pass through in the course of his earthly development.

It is the writer's conviction that, in similar fashion men, by reason of the things which they will be permitted by a wise and appreciative Providence to suffer, will learn that "the devil take the hindermost" is not the best rule for that game which provides for the needs of the individual, any more than it is the best rule for the game which provides for the common good.

Where Science Fails Amateurs May Try.

The writer is neither a prophet nor the son of a prophet, neither a logician nor the son of a logician, neither a physician nor the son of a physician. But, when all of the doctors have thoroughly and finally agreed that the patient has a hurt or a disease which they are unable to heal, then no great injury can be caused by suggestions from other sources. No malice can be charged against one who suggests keeping up courage while trying out the old-fashioned home remedies.

Before the days when trained nurses were as numerous as they now are, the writer and his good wife were taking their turn with other neighbors watching at the bedside of the leading physician of their home village, who was supposed to be sick unto death. The sick man's wife had a brother, also an able physician, who was present on account of the seriousness of the case. The sick man's son, who has since been honored with the presidency of the state board of health, then in his senior year in medical college, was also at home, while a local physician was the professional attendant upon the case.

These three men, masters of the science or art of medicine, agreed unanimously that the patient could not live until morning, and that the scientific or "professional" thing to do was to administer a stimulant, hypodermically, in the hope that the man's vitality might triumph over the disease. The sick man had perfect use of all his mental faculties and, in the light of his own knowledge of the science of medicine and diseases, agreed in the conclusion that he could not hope to live through the night; and I heard him say to the three doctors that he would not have his suffering prolonged by the use of stimulants. He said he fully appreciated the fact that his earthly life must end, and he refused to prolong suffering by means of the stimulant.

The three men of science felt that it was their duty to overrule the sick man's objection, but the wife took the side of the sick husband, explaining that she could not refuse what she believed would be his last request. The demands of science were thus overruled and the stimulant was not given. That was more than a quarter of a century ago. That man, who was then 60 is still living and, so far as I can see, is in a better state of health than he was previous to the serious illness to which I have referred.

Do not make the mistake of thinking that this is intended as a criticism of doctors or of medical procedure. The writer has had confidence enough to employ and to appreciate the very effective medical skill of three of the men referred to, and he looks upon them and their ability as valuable assets of the community in which they live. The circumstance is brought in as an illustration of the following assumption:

Progress Is Sick and Prosperity Nervous.

Some of the leaders of religion, who by the way are also the leaders of our public sentiment, and in that way molders of our public relations, hold to that original idea of their forefathers which was expressed in the words: "Civilization is a wrecked ship on the sea of worldliness and all that the most earnest religionist can hope to do, is to lay hold upon the individual soul and swim away with him to the shore of eternity."

The original idea of religion was that the pains and punishments of this earthly life were beneficial in proportion as they created a longing to escape into the life that is beyond. And some of the religious teachers of our day still hold that business, like "the world, the flesh and the devil," is beyond redemption; that business is the principal part of "the world, the flesh and the devil;" and that there can be no hope for its improvement, much less for its perfection. But, as in the case of the sick physician, who now in his more than four score years, has as good use of mind and body as at any period in his life, the writer believes Providence is still piloting the ship of progress. He believes that "the hand which holds creation up will guide" the progress of civilization aright, even though some of the doctors of religion agree

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that the case is hopeless; even though some of the educationalists do nothing more than denounce the "inherent and elemental barbarism of our times;" even though some of the philanthropists assume that philanthropy is possible only at the hands of widows or other heirs of estates that were originally gotten together by pirates or anti-philanthropists and purged by the fortunate death of the piratical or hard-hearted benefactors of the present philanthropists.

The writer believes that the hand which holds creation up will guide aright the future progress of civilization, even though some of the politicians or so-called statesmen still cling to the notion that appealing to individual selfishness is the only thing that will ever win response; even though certain leaders of education say, as they have said to me, "Education, vocational training, scientific agriculture and the like, cannot be conducted upon a self-sustained business basis. No one can follow the practices which we are demonstrating in this educational institution, and make it pay from a business standpoint. To follow out the lines that we demonstrate, the undertaking must have an endowment, an appropriation or constant donations."

The hand which holds creation up will surely guide aright the progress of civilization, even though certain business men denounce as visionary and impractical, everyone who tells them why it is that their former practices are no longer practicable—who ventures to explain why certain former leaders in the realm of insurance, transportation, banking, and the like have forfeited their lives under the nervous strain and humiliation which their former theories and practices have brought upon them.

In his regard for the doctors of religion, of philanthropy, of politics, of education and of business, the writer is just as thorough and sincere as he ever was in his regard for the three doctors of medicine who, at various times, served most acceptably as his family physician; and, as I proved my confidence in and friendship for these doctors of medicine by entrusting to their care the members of my family when sick, so I shall endeavor now to prove my regard and my friendship for these other doctors in every way possible. One way is to state, as simply and as plainly as possible, right here, that the preacher, the teacher, the philanthropist, the statesman and the business man are all elements which are valuable and necessary for the further progress of civilization just as the three physicians, who made the mistaken prophesy on that night 25 years ago, are, in spite of that mistake, necessary and valuable assets of the community in which they live.

A Truce With Those Who Disagree.

The writer is not unmindful of the fact that certain men, who think deeply, are very much at outs with the doctors of business; that certain other man, who think deeply, are equally at outs with the doctors of religion; that certain other men "have it in" for the doctors of education; and that a large number are "sore" toward all politicians or alleged statesmen. With all such, a truce will be more profitable than an attempt to agree.

As an inducement to enter into a truce, it is suggested that it will be easy for all of the classes mentioned to agree that the several kinds of doctors referred to are all wielding a more or less powerful influence over the public sentiment which expresses itself in the advancement or repression of civilization.

The best results, the greatest good for the greatest number, it is believed, will be obtained by accepting facts as facts, even when they may not be altogether to one's liking. The power of the doctors of religion, of education, of politics, of philanthropy and of business, over public sentiment, and through public sentiment, their influence and effect upon the progress of civilization, is a reality—a fact.

To ignore the power of these forces over public sentiment, to deny their power in the arrangement of our public relations, or to assume that they are factorless facts, would be to merit the confusion in which we are now finding ourselves. Assuming, therefore, that our public relations depend upon public sentiment, and that public sentiment depends largely upon the leadership of the doctors of religion, the doctors of philanthropy, the doctors of education, the doctors of politics, the doctors of business and the doctors of industry—let us endeavor to find out, first, wherein these various doctors agree; and second, wherein they disagree.

Common Need Must Not Be Ignored.

The common good cannot be ignored. On the contrary it must be served, as faithfully as possible, by all large organized business undertakings—more particularly by all incorporated business undertakings and most of all by those business undertakings which, by law, are declared to be utilities. The managers of utilities themselves may have been the last to yield assent to the foregoing agreement. It was not easy for them to understand why their undertakings were being singled out and, by law, prevented from the pursuit of private gain and compelled to accept a definitely limited wage or return for being forever and "supremely serviceable to the public." But even the managers of utilities now agree that the promotion of the common good—not private profit—is the principal justification for their existence. When the utility managers admitted that, the agreement became unanimous and universal—the agreement that, so far as utilities are concerned, "the common good is boss and must be served most obediently."

The Thing We Have in Mind.

This, then, is the thing we have in mind: To make plainer, if we can, the fact that the common good is master of all earthly endeavor; the fact that civilization, progress and prosperity are but other names for the advancement of the common good; the fact that earthly return from every man's effort is helped and hindered by the general condition of good business or bad business. It is desired to make plainer the fact that behind good business, there must be general prosperity; that behind prosperity there must be peace; that behind peace there must be good will among men; and that good will can not be kept up under the rule of "every fellow for himself and the devil take the hindermost." The thing we have in mind is to make plainer, if we can, the fact that before we harvest much more prosperity or peace, we must cultivate good will within ourselves, personally and individually; that we must put away all envy, all desire for personal or private advantage over our fellows, all inclination to enjoy revenge or effect a reprisal.

The thing we have in mind is to make clearer, if we can, that eventually after we have learned enough through the things we suffer, we will accept *for our everyday undertakings,* enough of the spirit and life of the Author of Good Will to save business from that destruction which certain doctors of religion are now predicting; that we will accept for all our practical undertakings (business and industrial) enough of the spirit and life of the Author of Good Will to save civilization from the destruction that is now being predicted by certain pessimistic doctors of business, industry, politics, education and philanthropy.

To repeat, in a little different language, the thought which we have been endeavoring to make more complete and more definite—"the thing we have in mind"—is to convince everybody of the following:

First, there is more than one side to the perplexity that is puzzling our age. Second, there is a sense in which "business is the modern form of warfare," and a sense, also, in which "war is hell."

Third, those departments of human endeavor which profess

to be "set apart" from business—the departments called religion, education, politics and philanthropy—are annoyed by that element in business which leans in the direction of war. They are annoyed with the purgatorial side of business. Therefore, these "set apart" interests have had a "common cause." They have had a common interest. And that common interest has been shown by their opposition to the annoying or purgatorial element of business. That common interest naturally inclined the leaders of religion, education, politics and philanthropy to "show up" the "hellishness" of business. This was done, without doubt, in some instances, as an act of patriotism; and in other instances as a matter of petulancy, as a matter of ill will, as a matter of resentment if not as a matter of reprisal or revenge.

Fourth, in consequence of this "showing up" of the "hellishness" of certain elements of business warfare, the leaders of religion, of philanthropy, of education, of politics, and of wage-seekers, have had a greater influence upon public sentiment, in late years, than the influence of the leaders of business.

Fifth, in consequence of their more influential leadership, public sentiment has crystallized, and is crystallizing more and more as time passes, into laws, the purpose of which is to "compel" business in general—incorporated or organized large undertakings more particularly, and "utilities" most of all—"to be supremely serviceable to the public," to be "perpetually and increasingly beneficial to the common good."

Sixth, utilities, therefore, have been compelled by public sentiment to recognize that Common Good is their master. But,

Seventh, utilities cannot be supremely serviceable—cannot be as serviceable as they should be—to the public; as effective in their service to the common good, as they otherwise might be, so long as the other departments of human interest and endeavor continue in ignorance or defiance of this same mastership. Utilities cannot attain to that perfect ideal or standard which public sentiment is demanding of them, so long as other departments of human interest and endeavor refuse to be developed in equal ratio in the direction of supreme serviceableness. Therefore,

Eighth, the leaders of utilities, as a matter of self-defense, must, first of all, see for themselves and then make plain to the public in general, this fact: That a utility cannot do all the things that is expected of it. A utility cannot be supremely serviceable to the public, except in proportion as the public itself, and the individuals and other departments of human interest and endeavor constituting the public, proceed also in the direction of supreme serviceableness.

Utilities Have Been Muzzled.

Public sentiment has compelled the utilities to muzzle themselves against "charging all the traffic would bear"—as though the seeking of a maximum of profit were a crime—while at the same time, public sentiment and law permit individuals and other departments of human interest and endeavor, to attack the utilities almost without any restraint at all.

One of the things we have in mind, therefore, is this: Utilities must first of all, acknowledge the shortcomings of the past, during which, in common with all other departments of human interest and endeavor, they failed to submit to Common Good as master. Next, utilities must profess, and make good their profession, that now and henceforth they are serving and will serve the common good; that now and henceforth they are muzzled and will continue to muzzle their treasuries against more than a reasonable return somewhat in the manner that firemen place towels or sponges over their nostrils and mouths to protect them from contaminating gases.

In addition to this, we think utilities must become aggressive—that they must abandon the defensive and take up the offensive line of action. Utilities must take upon themselves the burden of unerring leadership of public sentiment in the direction of the common good. "Business," in a general way, must take a more philanthropic, a more religious, a more intelligent or educational, and a more statesmanlike interest and a more active part in the genuine welfare of mankind in general. It must take a more active part in the perpetuation of progress and the advancement of civilization, in the upbuilding of proper public relations, not merely for public utilities alone, but for the entire universe or realm of human interests.

Besides all this, in connection with all this, but not in advance of any of the preceding steps, we think, after having added to its shrewdness, kindness; to its kindness, conscientiousness; to its conscientiousness, a comprehenive intelligence; to its comprehensive intelligence, a statesmanlike leadership—after all this—it becomes the duty of business to make plain as day the following:

Can Business Be as Kind as Philanthropy?

When business is as kind as philanthropy, as conscientious as the church, as intelligent as the school, and as masterful as government, then there is no excuse for philanthropy refusing to enter into a business that will make it self-sustained; there is no excuse for the church refusing to enter the market of the world in a practical business undertaking that will make it self-supporting; there is no reason why schools should ask for appropriations from the tax payers' treasury or endowments from the estates of men whom they stigmatize as pirates; nor is there any reason why statesmen should need taxes to live upon.

To illustrate: The writer was present at an important conference made up of leaders of philanthropy, leaders of religion, leaders of education and leaders of politics with a sprinkling of business men. The question of the practicability of the Golden Rule and the success of those who followed the Golden Rule in business, was up for discussion. Without a single exception, every man who professed to be "set apart" from the hazards, sufferings and the contaminations of practical business affairs, expressed absolute confidence that the closer a man followed the Golden Rule, the more successful he would be in business.

Recognizing that these men belonged to those classes which have the greatest power over public sentiment, the writer suggested that all argument concerning the matter be omitted, and that property, credit or capital, to such extent as the "set apart" men might deem necessary, be provided. Then that those "set apart" men should, in a sense, renounce their set-apart-ness by becoming responsible, as directors, trustees, co-partners or managing board of whatever business they might choose to enter, for the purpose of demonstrating their confidence, and more especially for the purpose of demonstrating their definition of success. This to be done for the purpose, also, of demonstrating their interpretation of what it means to follow the Golden Rule in a practical way through the "inherent and elemental barbarism of our times."

Two of these "set apart" men were enthusiastic in favor of undertaking what they called a "demonstration" of their confidence in the "workableness" of the Golden Rule. They were enthusiastic in favor of undertaking to demonstrate their ability to manage a business in such a way that the public should be benefited—that the common good should have supreme serviceableness. The majority, however, was indifferent, if not indignant at the suggestion that they, who were "sacredly set apart" and whose business it was to be as a hand on the guidepost pointing to perfection, should so forget their exalted "calling" as to yield for an instant to the temptation to take upon themselves the hazards, the sufferings or the contaminations of material or earthly affairs.

Irresponsibles Not the Most Sanitary.

A short period of the writer's earlier life was lived in close

connection with a coal mining enterprise. During that short period I discovered that miners bathe oftener and have learned to bathe more effectually, so far as cleanliness is concerned, than any other equally large class of men. I discovered that contrary to all outward appearances of dirtiness, the miner is often more scrupulously clean than any other class of men—more often scrupulously clean, more thoroughly bathed, than the dude, who would not so much as touch his little finger to a piece of coal.

I have been in close enough touch, during later years, with men who are hazarding the equilibrium of their mentality—hazarding that which we mistakenly call the strength of their nerves—in what the "set apart" men look upon as the earthly, materialistic and contaminating affairs of business, of the world-market, which provides food, clothing and shelter even for those who are "set apart," as well as for others.

One of these men, at a time when he was as serious as he ever can be, said to me, "We want to get our affairs upon a basis which will be so absolutely fair and just to every possible interest, that no human ingenuity can ever pick a single flaw." Another, in an equally serious manner, said: "We have no grounds for hoping that we may protect or preserve the value of a fair equity for our real investors. What we must address ourselves to is the task of preserving against the onslaught of an enraged public, as much of the remnant of a fair equity as possible."

Therefore, as I learned by close association that the miners are more frequently scrupulously clean, so far as the matter of bathing is concerned, so I am learning by close association with the men, who appear to the world to be contaminated with the materialism of business selfishness, that many of them are more willing to be actually employed in the work of pouring oil upon the troubled waters; more willing to be actually begrimed, smoked and singed even, while supplying water to cool the temperature of the purgatory of business; more willing to bruise when unavoidable, and to be bruised when necessary, in the hand to hand struggle which is dragging business from the purgatory of the past toward the paradise of the future—than are certain guidepost hands which merely point toward an alleged but, as yet, untried theory of perfection.

I would not be misunderstood. Many of the doctors of religion, philanthropy, education, statesmanship and industry are just as willing and just as active, as are the best of the doctors of business, to bruise and *to be bruised when necessary, in order that the public may be benefited*—to bruise and to be bruised when necessary for the common good.

New Building of Cincinnati Bell Company.

The Cincinnati & Suburban Bell Telephone Co. has announced the opening of its new $1,000,000 building at Fourth and Hammond Streets, Cincinnati. This is a handsome structure and as thoroughly up to date in all that makes for comfort, convenience and efficiency as any telephone building in the United States. The building is now occupied by the office force of the company and other departments. The cut-over from the old building will be made about November.

The new structure is of steel frame construction with concrete reinforced fireproofing and a brick and terra cotta surfacing. Entrance to the building from Fourth Street is through an impressive lobby, in which are three elevators. The counting room is one of the finest banking rooms in the United States. The massive columns and high wainscotting are of a white and black marble of unusual strata. Bronze grills separate the various departments. Along the western side of the office is a row of bronze cages for the receivers, connected with the cashier's offices on the fourth floor by pneumatic tubes to insure speed when subscribers call to pay bills.

The twelfth floor of the building is a roof garden, the roof being paved with red tile and surrounded by a balustrade for safety. From here a view of the Cincinnati and Kentucky hills can be had. This retreat for the employes and their friends will be beautified with palms and flowers.

Ample provision has been made for fire protection throughout the building and for the escape of employes, including a fire chute which in a very few minutes could entirely empty the building.

The main operating room will be located on the ninth floor of the building and on the eighth floor will be the lockers and rest rooms of the operators. There is also on this floor a large dining room and kitchen, and a hospital. On these floors and on the office floors of the building, cork floors are used to deaden the sound of footsteps. An interesting feature in connection with the building is the provision for a grocery department in the basement, carrying a supply of canned goods and provisions. This department will be presided over by a matron and from this source the large dining room will be supplied and all substations in the telephone territory will be furnished daily by auto trucks with provisions for the use of the operators. There is also a refrigerator room for the storage of perishable articles of food, an ice making plant and other similar conveniences.

Civic Patriotism of City Exchange Operators.

The policy of rigid economy which the city administration of Cincinnati finds necessary to practice to meet a shortage of $360,000 between now and the first of next year, will hit not only street lighting and all other municipal activities, but also the time and vacations of city employes. A number of city employes will lose their vacations, due to the necessity for economy. Among them are the three telephone operators in the city exchange. "Sorry about losing our vacations?" said Miss Ada Ireland. "Of course, like everybody else, we would like them, but how can we better show that we are patriotic citizens than by making a small sacrifice like this under the circumstances? If we took vacations it would mean that the city would have to employ substitutes—and there is no money available for this. We are not complaining about this at all."

The other two operators spoke in a similar vein.

New Building of Allen Properties at Corinth, Miss.

The Allen Properties and the Stantonville Telephone Co., at Corinth, Miss., have just moved into their new building on Waldron Street, the principal street of Corinth. The building overlooks the court house and its location is one of the most desirable in the city. The front of the structure is of red pressed brick with white stone trimmings, while above the second story windows is a projecting roof trimmed with green tile. On either side of the entrance to the building is a bracket light of brass, on which will be mounted an Independent shield.

The building is 25x70 ft. in size. The ground floor will be used for a store, while the second floor will be occupied by the Allen Properties' offices and the exchange of the Stantonville Telephone Co. The president and general manager will occupy offices in the front and in the rear of these will be the office of the auditor of the Allen Properties. Back of the lobby is the operating room of the Stantonville Telephone Co., a rest room for the operators, terminal room and toilets. The cut-over to the new exchange has already been made by the Stantonville Telephone Co.

Texas City Council Files Rate Suit.

The city council of Ballinger, Texas, has filed suit against the West Texas Telephone Co. to restrain it from increasing its rates for telephone service. The principal question involved is as to whether the city council has the power to regulate telephone rentals. The case will be tried at the fall term of the district court at Ballinger.

The Rejuvenation of the Craneville Telephone Exchange

A Serial Story Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery —Problems Encountered by Every Practical Telephone Man

By Paul Hamilton

"I believe we finished with a plug at our previous conference, with one exception, and perhaps that belongs as much to the cord as to the plug. That is the manner of attaching the three wires of the cord to their proper terminals," said Mr. Barrows. "As I wish to begin at the broad end of the cord we will come to this feature in due time."

"The cord, he isn't very much, there isn't much to him," said Germany.

"No, there isn't much, but what there is is very troublesome if not carefully handled and cared for. Beginning at the board terminals, we have three separate clips. There are several styles, among which these are the most generally used (Fig. 123). The wires of the cord are usually so attached to the ferrule of the clip with solder. I have seen cords, however, where the ferrule was merely flattened, or pressed tight against the wire.

"This (Fig. 123-*A*) is a very satisfactory style, but it has one fault which lies between both the cord clips and the punching, namely, the hook on the cord. It looks as if the weight of the cord would result in this clip making contact at all times even without the set screw, but it will not. Even with the set screw, loose connections are frequently found."

"A loose connection is easy trouble, I should think," said Frank.

"No, in this case it is not, for it comes and goes, according to the vibration of the cord. If we could devise equipment which would eliminate the possibility of loose connections, 50 per cent. of our equipment trouble would be also eliminated. It is more satisfactory to have a circuit 90 'open' than 'partly open.' There would be far less bad devices to account for, because no service at all could be given. As the saying is, 'No eggs at all are better than bad eggs.'

"Here is another style very similar (Fig. 123-*B*). This has

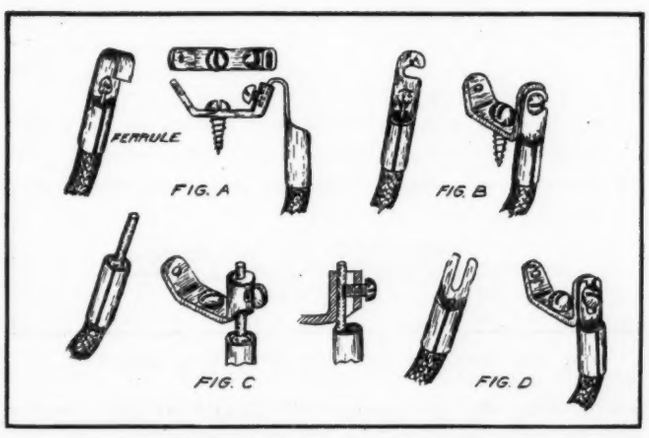


Fig. 123. Styles of Cord Fastenings.

the same fault as the first clip but to a lesser degree, I believe."

"It wouldn't be quite so handy to attach, though," Germany remarked.

"Real English! Germany is learning from the Doctor," said Frank.

"Germany is right, however," answered Mr. Barrows. "It is a little awkward to make this connection without removing the set screw, as the ferrule of the cord clip extends down into the mounting board.

"Here is another kind (Fig. 123-*C*). In this case, the wire is extended beyond the ferrule or the ferrule so shifted that it can be pushed into the fastener and bound with a set screw.

"We meet another difficulty with this type. In setting the screw, it cuts into the wire and sometimes cuts through it.

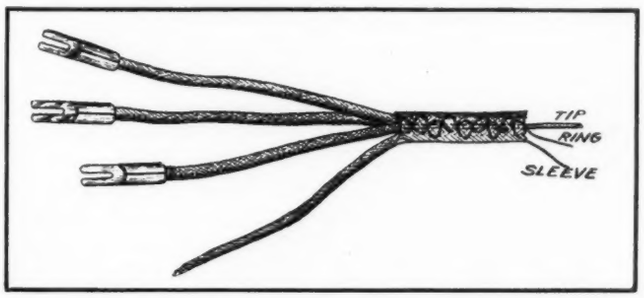


Fig. 124. Cord Construction Showing Location of Conductors.

At the same time, if it does cut through, and the screw loosens, the notch in the wire still hangs to the point of the screw, causing high resistance and noise in the circuit at times. Probably this style (Fig. 123-*D*) is less troublesome at this particular point than the others for the reason that if the screw becomes loosened, the clip will in many cases fall back through the mounting board and open the circuit.

"About six inches of the board end of a cord is brought out in two or three separate strands. Each strand has a distinctively marked insulation, some being white and blue and others with a colored strand woven in to designate tip, ring and sleeve wires.

"As soon as they are brought together in one casing, they are no longer designated by a color code, but by location in the cord, like this (Fig. 124). That the cord may be flexible either tinsel, which is very fine wire braided into a strand, or a single spiral wire is used. The tip wire takes the center of the cord and if spiral, is wound very small. Its insulation is silk and then cotton. Around this, the ring wire is wound if spiral, and additional insulation added. The sleeve wire is then coiled around the two and the final insulation is added with a heavy linen braided casing on the outside."

"A cord is not the same size at both ends?" Frank remarked inquiringly.

"No, and there is a very good reason for that. The plug end receives the wear and strain in handling. Therefore about 18 inches is reinforced with an additional casing. This reinforcement protects the cord where it runs through the board and also protects from moisture and wear from handling. It also provides a shoulder to screw into the butt of the plug and gives additional support to the strain of the cord weight."

"The last cords we got," said Frank, "had been covered with something at the plug end. They were sticky and hard to handle at first."

"Yes. They have been dipped in a solution, principally made of beeswax. It soon gives them a glazed surface when

in use and you will find they will not become ragged nearly as rapidly as the others."

"What is the difference between the tinsel and single wire conductors?" the Doctor inquired.

"There are several advantages and disadvantages to both. What one has, the other has not, so to speak. In the first

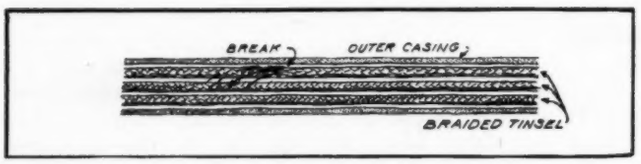


Fig. 125. Tinsel Cord Conductors Break and Cause Crosses.

place tinsel was used on account of its low resistance and flexibility when made into a stranded conductor. This made the spiral arrangement unnecessary as the wires were insulated separately with different colored insulations and bound together with a braided cover.

"The trouble on this style of cord was excessive for two reasons. While as a whole the braided tinsel was very durable, each single strand was of itself very weak and would break at a slight strain. Thus the cord would not break clean, but gradually, and the resistance constantly increased owing to the increase in the number of open strands of the conductor. Eventually the cord would become so 'scratchy' that it would be thrown out of service. To locate such a break was difficult and, while cutting off the plug and setting it back a few inches often cleared the trouble, it was found that this was scarcely worth while because of the weakened condition of the tinsel in other parts of the cord. This is about the way it worked out—I mustn't forget Germany's picture."

"Oh, he's doing better since he and the Doctor have changed languages. The Doctor is a Dutchman now and is reading Dutch books all the time he has."

"Well, it is like this (Fig. 125). When the fine strands begin to break, naturally they unbraid for a little distance and the strain is increased upon those not broken. One would think the broken ends would separate, but they do not, owing to the fact that when unbraided they are slightly longer. The ends keep making and breaking—arcing, we call it—as the current passes from one to another, increasing and decreasing the resistance, acting upon the receiver magnet in much the same manner as do the transmitter carbon variations with the current. It has been found that cords with almost every strand broken will at times act normally and at other times become practically useless.

"Another pointed deficit was, and is, that the fine strands will work through the insulation and come in contact with an adjacent conductor, making a noisy cross, as at point *X* (Fig. 125). It proved to be economy from a service standpoint to discontinue making repairs on these ends, but this economy was more than counterbalanced by the cost of new cords."

"Why wouldn't a single wire a little larger, do as well—a soft kind that bends easily?" Frank inquired.

"The strain is too great for the use of soft wire, and flexibility is the first principle of cord construction. To overcome the troubles I have mentioned, a much less flexible wire was used, made in a spiral or spring form. Two features of importance resulted. They proved more serviceable but the metal used was of much higher resistance per foot and the length of each strand was greatly increased by its spiral form. Thus the total resistance of the cord was increased many times; in fact it was found necessary to use steel wire which we know is not used for conducting electric current on account of its high resistance and peculiar magnetic qualities."

"But it breaks too," said Germany.

"Yes, that is one of its redeeming features in this case. When it breaks, the two ends part company. They become separated by the resilient action of the wire and the circuit is open for once and all.

"Even with this higher resistance, the effect upon local service is not as great as was that of the frequent noisy connections due to tinsel cords. The resultant effect of the use of steel cords is more uniform transmission. The loss is not noticeable as a general thing.

"On long distance service, or where it is necessary to insert more than two pairs of these cords in the making up of the circuit, the transmission suffers to such an extent that tinsel cords are still used.

"Now I believe we come to the plug again. The process of attaching the cord conductors to their respective terminals is one which requires much care. There are a few practical points well worth remembering. Take the steel cord first: The first operation is to strip the outside insulation or casing so as to expose the sleeve wire. It is the habit of some repairmen to take the end of this wire in their pliers and pull out a foot or so; then to cut off all but about an inch, bend it back and screw the cord into the plug. The wire being on the outside of the casing, makes contact with the sleeve of the plug.

"Then they remove the next layer of insulation and expose the ring spiral. They give this a hard pull and straighten out whatever happens to pull from the casing easily, cut it off and give the end a turn around the screw, and trim the remaining point. Then they serve the tip the same way, slip the shell into the plug and call it a job."

"That is the way we do maybe," said Germany.

"I guess you never have had any instruction on that point, but I'll show you the result of such work, especially of pulling out the spiral conductor. Perhaps I can make a picture and explain it afterwards.

"Now you see the conductors are turned in spiral form (Fig. 126), so that in bending the cord, the strain is indirect; that is the strain is not brought to one small part but is distributed over several turns of the coil.

"We know that the cord is subjected to the greatest strain at the butt of the plug. Therefore, by pulling out the spiral beyond the point where the cord enters the plug, we put a direct strain on the conductor, almost the same as if using two pairs of pliers. Hence the spiral formation should be disturbed as little as possible and only enough of the conductor removed to avoid crossing inside the plug. This treatment gives us the benefit of the spiral design.

"The difficulty with attaching tinsel conductors is to get the conductors securely fastened under the terminal screw

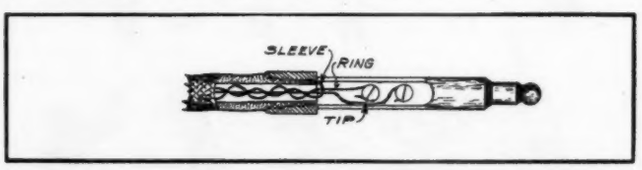


Fig. 126. Effect of Uncoiling Spiral Cord Conductor.

and to trim the protruding ends cleanly so that one or more fine strands will not be left to 'cross up' the plug.

"I had intended to take up the key also tonight and begin on the relays next week but will let the keys go over."

(To be continued.)

More Physical Connection Litigation in Michigan.

The Consolidated Telephone Co., of Bad Axe, Mich., recently started injunction proceedings in the court of Huron County, Mich., to restrain the Michigan Railroad Commission from enforcing its recent order compelling a physical connection with the Valley Home Telephone Co.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Washington Court Overrules Physical Connection Order.

The superior court of Thurston county, Washington, Judge John R. Mitchell presiding, has handed down a decision in which the action of the Public Service Commission last January, in ordering the Puget Sound Independent Telephone Co. and the Skagit River Telephone & Telegraph Co., to make physical connection, is held to have been unwarranted under law and is inferentially annulled.

The commission entered its order on the ground that the people served by the Skagit River company should be given connection with the Independent company and through the Independent company with the Pacific Telephone & Telegraph Co., the latter companies having physical connection through a contractual relation. The court holds, however, that the commission in entering such order violated the contractual rights existing between the two companies.

South Dakota Mutual Must Extend Service.

The South Dakota Railroad Commission has ruled, in a case brought against the Gas Belt Telephone Co., by Robert W. Lumley to require the defendant company to furnish the complainant telephone service at his residence in Lewellyn Park Township, in Sully County, S. D., that the company must provide such service, at regular rate, although this will necessitate the building of 2½ miles of line. The company has heretofore required that applicants for service must either buy stock in the company or build their own lines connecting with the system. From the testimony it appeared that the company has 75 subscribers and 2.86 2-3 miles of line for every subscriber.

The company declared that its finances would not permit it to build the 2½ miles of line, but it appeared that its past due telephone rentals amounted to $1,200, of which it was testified that $1,000 is collectable. The commission point out that officers of the telephone companies must be considered remiss in their duties if telephone rentals are not promptly collected, and collection should be made preferably monthly or quarterly in advance. It also developed that a second subscriber would possibly take service if the proposed extension were built. On the testimony presented the commission ordered the company to construct the line. It was further ordered that the directors of the company rescind an action to exempt themselves from the payment of telephone rental as payment for their services as directors and that they pay the same rates as other subscribers. The commission declared that any payment for their services as directors should be made in cash by vote of the stockholders.

Proposed Rate Basis for Janesville Interchange Service.

E. D. McGowan, through whose petition the Wisconsin Railroad Commission on June 3 ordered physical connection which would provide for an interchange of service between the exchanges of the Wisconsin Telephone Co. and the Rock County Telephone Co., in Janesville, Wis., appeared recently before the commission and entered his objections to a schedule of rates and plans made out by the Wisconsin Telephone Co. for compliance with the order. These plans and schedules had already been submitted to the Rock County Telephone Co. for its approval.

Mr. McGowan protested that the system outlined and the charges designated are unreasonable and exorbitant and "that such charges are not such as are contemplated by Chapter 546, Laws of Wisconsin, 1911." Mr. McGowan petitioned the commission to investigate the case further, with the idea of prescribing reasonable conditions and compensation for the joint use of the two telephone exchanges.

The following was the proposition outlined by the Wisconsin Telephone Co.:

The Wisconsin Telephone Co. proposes as the proper basis of charge for service furnished under said order in the above entitled matter, the following: Each subscriber to the exchange of the Rock County Telephone Co. who wishes service over or through the system of the Wisconsin Telephone Co., shall subscribe for such service and pay a charge of $6 per year for the right to obtain such service, and in addition shall pay (a) for each message sent or received by him over the toll lines of the Wisconsin Telephone Co. the regular toll charge of said Wisconsin Telephone Co. for each message, plus an additional charge of 15 cents, and (b) for each local connection (whether city or rural) to or through the exchange of said Wisconsin Telephone Co., at Janesville a charge of 10 cents. Each subscriber of the Wisconsin Telephone Co. who wishes service over or through the system of the Rock County Telephone Co. shall subscribe for such service and pay a charge of $6 per year for the right to obtain such service, and in addition shall (a) pay for each message sent or received by him over the toll lines of the Rock County Telephone Co. the regular toll charge of said Rock County Telephone Co. for such message plus an additional charge of 15 cents and (b) for each local connection (whether city or rural) to or through the exchange of said Rock County Telephone Co. at Janesville a charge of 10 cents.

Telephone Companies Exempt from Rayburn Bill.

As the result of the activity of the representatives of telephone interests at Washington, D. C., the so-called Rayburn bill, or H. R. 16586, as reported to the senate, contains a clause defining common carriers, the issuance of whose securities is to be subject to regulation, as "common carrier railroad corporations." This, says Secretary MacKinnon, secretary at Washington of the National Independent Telephone Association, relieves telephone companies of any further concern in the matter.

Telephone Investigation Proposed for Washington, D. C.

Declaring that telephone service in the District of Columbia is inefficient and the rates charged are excessive, Representative Albert Johnson, of Washington, recently introduced a resolution directing the District Public Utilities Commission to investigate the service and rates of the Chesapeake & Potomac Telephone Co. The resolution was referred to the District committee. It is stated that the commission already has the authority to make such an investigation and may do it immediately without further action by the House.

New Franchise for Muskegon Company.

After refusing to consent to a change in the franchise of the United Home Telephone Co., of Muskegon, Mich., the city council of Muskegon has changed its mind and has granted the franchise desired. The company desired to install a new plant with new and modern equipment in order to meet the need and insistent demands for improved service, but the Michigan Railroad Commission would not permit the issuance of the necessary securities unless the city

granted higher rates to secure the investment. This the city at first refused to do, whereupon the Michigan State (Bell) Telephone Co. made a proposition to install a plant and provide local service and began an aggressive campaign for subscribers. Confronted by the possibility of duplicate service, the city council concluded to give the Independent company the modified franchise, which increases rates from $24 to $36 a year.

Michigan Companies to Merge.

As soon as guarantees are provided that all existing traffic arrangements will be preserved and that no patron of either company will be inconvenienced, the Michigan Railroad Commission has promised permission to the Farmers' Telephone Co. of Azalia and Dundee, to buy the Monroe County Telephone Co. of Dundee. The commission is asked to approve a bond issue of $12,000 for the purchase.

Opinion of Attorney General of Indiana.

The attorney general of Indiana has rendered an opinion for the Indiana Public Service Commission in regard to the commission's power to increase rates above the maximum charges fixed by franchise. The attorney general holds that it was within the power of the legislature to have conferred authority upon the commission to increase such franchise rates, upon surrender of the franchise by the utility for an indeterminate permit, but that no such power was conferred upon the commission.

New York Barge Canal Cause of Pole Claims.

Claims for the appropriation of poles by the state in the acquisition of lands for the new barge canal in New York state, have been filed by the New York Telephone Co. with the state board of claims. The company asks $1,451 for poles taken in the vicinity of Oswego and $1,376 for poles near Albion.

Difficulty With Nebraska Farmers Adjusted.

The Lincoln Telephone & Telegraph Co. has reached an agreement with the farmers in the vicinity of Ashland and Wahoo, Neb., relative to rates for the telephone service. Under the new arrangement, the farmers are to have the telephone service for a period of five years at $1 per month, and a toll rate of 10 cents between Ashland and Wahoo.

The telephone company is to immediately fix up all farm lines, and give as good service as is possible.

Illinois Commission Issues General Order.

A conference ruling of importance to telephone companies in Illinois was announced by the Illinois Public Utilities Commission on July 31. It has to do with rates, rules and classifications. After stating that all free and reduced rate service is prohibited under the provisions of the utilities act, the ruling details the position of the commission as follows:

It follows, of course, that all free and reduced rate service now given to public offices and officers in the various municipalities is prohibited by the above, but it will not be the general policy of the commission, on its own initative, to inquire into the reasonableness of the terms and conditions of ordinances providing for compensation to municipalities in the way of telephone service, where the terms have been agreed upon between the municipalities of the state and the public utilities prior to the taking effect of the act creating this commission.

The law prohibits free local service from public pay stations; it also prohibits free toll service for a part only of the subscribers of the telephone company and not for all of the subscribers, similarly situated. It does not, however, prohibit telephone companies from furnishing free service to such of its employes as it must reach in order to provide adequate and efficient service to the public.

Where telephone service in railway stations may be reasonably required under the provisions of Section 49 of the state public utilities law, railway companies should pay the regular business rate for such service. In railway stations at which the railway company cannot reasonably be expected to pay for a telephone, or where it already pays for one or more telephones, telephone companies may be permitted, if they so desire, to place a pay station telephone equipped with a coin collector. Under these conditions all subscribers of the telephone company in question can have communication with the railway station without additional charge, but messages sent from the station to a subscriber must be paid for.

At large railway stations, where the convenience of the public requires it, and the volume of the business warrants it, telephone companies may be permitted to install public pay stations.

The classification of telephone subscribers into business and residence subscribers with higher rates for the former than for the latter is reasonable and permissible, (1) because of the greater cost of providing business service and (2) because it is a well established principle that a lower residence rate is necessary in order that a sufficiently large number of subscribers may be secured to make the telephone valuable to all users. An extension of this classification may be made so as to apply to churches, hospitals and other charitable institutions, provided that the two principles of cost and service to other subscribers are continually kept in view, and provided further, that such classification shall not apply to any institution supported by public taxation.

Where the place of business and the residence of a subscriber are in the same premises and no telephone is installed in the place of business, the business rate should be charged for the telephone installed in the residence.

Every telephone company which offers business and residence rates should publish a separate and distinct rate for business telephones and for residence telephones, and a so-called combined rate for a business telephone and a residence telephone which is less than the sum of the regularly published residence and business rates is unlawful.

It is lawful for telephone companies to furnish free toll service to their respective subscribers provided the same is given to all subscribers alike. In such cases the free toll service may be regarded as a part of the service which each company is providing for its subscribers.

Where special rates have been in effect under individual contracts, said rates shall be changed to conform to the regular schedule rates. Where one class of service is superseded by another class of service it is lawful to collect that rate which the regular schedule provides for the class of service furnished.

It is lawful for telephone companies to offer discounts from the regular charge, on conditions of payment of the bill on or before a certain date, provided that such discount rules are strictly complied with, without discrimination.

In cases where the company provides special wiring or special apparatus to meet special conditions, it is lawful to collect a special installation charge to cover the additional expense incurred. An addition to the regular charge for the service shall not be imposed on account of special wiring or special apparatus which is properly chargeable only to the regular installation.

Telephones installed or used for short periods of time, such as telephones in temporary business places, summer cottages, political headquarters, etc., may justly be charged a higher rate than the proportionate charge of the regular annual rate for the respective class of service under the regular schedule.

A charge may be made for removing telephones from one address to another after the first installation and prior to the expiration of the term of the subscription or contract for service, provided that the amount of this charge shall be as nearly as possible the actual cost of performing the work.

It is, therefore, ordered that all telephone companies doing business in the state of Illinois change their rates, rules and classifications, not at present in harmony with this ruling to conform with the same. Two months will be considered an adequate period of time within which to comply with the provisions of this order.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

July 23: Application filed by The Roseville Telephone Co., operating at Roseville, Placer County, Cal., asking authority

to issue 50 shares of capital stock of the par value of $10 per share. The company represents that the sale of this stock is necessary to furnish funds to pay for labor and material used for construction since April 1, 1914.

September 8: Hearing to be held at Bakersfield, Cal., in case against the Pacific Telephone & Telegraph Co.

ILLINOIS.

July 28: Hearing at Chicago in the case of the Intertownship Telephone Co., of DeKalb County, against the DeKalb County Co., to compel the latter company to provide toll connections over its lines.

July 31: The Illinois Mutual Telephone Co. was ordered to change its rates at Seward, Winnebago county, so as not to discriminate in favor of stockholders.

July 31: The Pitcher Telephone Co. was given permission to change rates at its Warren exchange.

July 31: The Williamsville & Sherman Telephone Co., of Williamsville, Ill., was granted permission to discontinue its Sherman exchange and serve Sherman subscribers from Williamsville.

July 31: The People's Mutual Telephone Co., of Hillsboro, Ill., was given permission to issue $15,000 additional capital stock for the purpose of erecting 167 miles of line in the vicinity of Hillsboro, Litchfield and surrounding towns.

July 31: In the case of the citizens of Armington against the Eminence Mutual Telephone Co., and the Baker Telephone System, a physical connection between the companies was ordered.

INDIANA.

July 29: Hearing scheduled at South Bend, Ind., in a case involving an increase from $30 to $36 a year in the rates charged by the South Bend Home Telephone Co., to former mayor Charles L. Goetz, for telephone service at the Goetz cigar factory. In 1907 before the present law was passed the company contracted to supply the service at $30 in consideration of Mr. Goetz taking some stock in the company and the company requested the commission to pass on the question as to whether this contract is discriminatory under the law. Prior to the scheduled date of hearing the company informed the commission of the withdrawal of the complaint, stating the $30 contract would be continued.

July 29: Petition by the Merchants Heat & Light Co., of Indianapolis, requesting that compensation be fixed for the joint use of poles. The Indianapolis Light & Heat Co., the American Telephone & Telegraph Co., the Central Union Telephone Co., and the Indianapolis Telephone Co. were made parties to the petition.

July: The petition of College Park, Ind., for better telephone service from the United Telephone Co., Huntington, Ind., has been amicably adjusted for the present by the Public Utilities Commission, the company having agreed to run three new lines to College Park that shall be immune to trouble from tree foliage. The petition will remain on file with the commission for 30 days. At the end of that time if the company has not done as agreed, a hearing will be held and the commission will dispose of the case without further delay.

MICHIGAN.

July 17: Application by the Monroe County Telephone Co. for permission to purchase the Farmers' Telephone Co., of Dundee, at a cost of $12,000.

August 13: The commission has given the Independent telephone companies involved in the proposed merger and division of territory between the Michigan State Telephone Co. and the Southern Michigan Telephone Co. until August 13 to present their side of the case.

MISSOURI.

July 28: Application by the Home Telephone Co., of Kansas City, for authority to construct telephone lines and establish exchanges in North Kansas City, Harlem and Clay county. This is the beginning of the establishment of an exchange on the Clay County side of Kansas City to be a part of the Kansas City plant. The company already has toll connections with the Clay County Telephone Co., and this relation will continue. The demand of that growing suburb for more efficient city telephone service necessitated the new exchange, officials say.

July 29: Order directing that a physical connection be made and maintained between the Farmers' & Merchants' Telephone Co., of California, Mo., and the Missouri & Kansas Telephone Co. for toll business. The commission will establish the division of joint rates after the physical connection is made.

September 9: Hearing at Jefferson City, Mo., at which officials of the Southwestern Telegraph & Telephone Co. will have opportunity to interrogate the commission's experts as to their valuation of the St. Louis exchange of the company.

NEBRASKA.

July 22: Nebraska Telephone Co. authorized to issue $1,500,000 of common stock the proceeds to be used to retire $1,350,000 of 6 per cent. demand notes for which the company received their face value, the balance of $150,000 to be used for future construction and betterments. April 4 the capital of the company was $11,838,482 and its liabilities $15,078,567.

July 24: Request by the Board of Trade of Malone, N. Y., for review of rates of the Mountain Home Telephone Co.

NEW YORK.

July 24: Order granting a certificate of convenience and necessity to the Long Lake Telephone Co. for the operation of lines already constructed, which the company is to acquire from Timothy D. Sullivan and Edgar C. Potter.

July 25: Decision in a case filed in 1912 by residents of Brownville and Dexter, N. Y., against the New York Telephone Co. in which the commission allows the company to charge residents in the two cities the same base rate as for the Watertown exchange but reduces the mileage charge from $6 to $3 per quarter mile for direct lines; from $5 to $2 for two and four-party lines and from $3.50 to $1.50 for multiple lines.

July 31: The Rochester Telephone Co. authorized to issue $100,000 of its 5 per cent. 30-year general mortgage bonds at not less than par.

July 31: Petition by the Federal Telephone & Telegraph Co., of Buffalo, N. Y., for an order extending the period within which the company may issue bonds and for an order authorizing the issue of $500,000 of such bonds.

OHIO.

September 16: Postponed hearing at the request of the Central Union Telephone Co. on the company's protest on the valuation of its Lancaster property as fixed by the commission. This case arose out of the complaint of the city of Lancaster against the increased business rates established by the telephone company, effective on July 1.

PENNSYLVANIA.

July 27: Complaint by Dr. Charles M. Campbell and other Petersburg, Pa., patrons of the Juniata & Shavers Creek Telephone Co. against a yearly charge of $24 and an additional toll rate of 5 cents for service from Petersburg to Huntington, 7 miles.

No. 1039: Order dismissing complaint of the Spring Brook Lumber Co. and residents of Moosic that rates of the Bell Telephone Co. between Scranton and Moosic were unreasonable and unjust; the telephone company having included the complaint in a new local exchange to take care of the growth of the telephone business in the section in question and having proceeded according to the best telephone practice after a careful consideration of the needs of the district.

SOUTH DAKOTA.

July 24: Order requiring the Gas Belt Telephone Co., of Sully county, S. D., to extend service to Robert L. Lumley, although the construction of 2½ miles of line is required, at its regular rental rates; that the company refrain from requiring as a condition precedent to the furnishing of telephone service, that an intending subscriber be required either to purchase stock in the company or build his line to the lines of the defendant company; that the board of directors rescind an action to exempt themselves from telephone rental as payment for their services as directors; and requiring the directors to pay the same rental as other subscribers.

August 4: Hearing held at Canton, Lincoln county, in the matter of the investigation into the rates, rules, regulations and practices of the Canton Co-operative Telephone Co.

August 5: Hearing held at Parker, Turner county, in the matter of switching service and rates therefor between the Hurley Telephone Co. and the Steninger Telephone Co.

Decision in the matter of the investigation of the rates, charges and practices of the Montrose Telephone Co., Canistota Telephone Co., Hartford Telephone Co., Hartman Telephone Co., Humboldt-Hartman-Wellington Telephone Co., and the Farmers Rural Telephone Companies, Nos. 1 and 2. The decision reiterates the commission's decisions prohibiting favored rates to stockholders, prohibits the charging of message rates from exchanges to instruments on rural lines where the latter are connected on a switching basis, fixes rates for switching service, provides for routing of toll messages, etc.

WISCONSIN.

July 22: Protest by E. D. McGowan against schedule of rates and plans made out by the Wisconsin Telephone Co. for compliance with the order of the commission for physical connection with the Rock County Telephone Co. at Janesville, Wis.

Queries on Theory and Practice

Transmitter Battery, Line Testing and Office Ground.

We use gravity batteries on our switchboard transmitter and are planning to install a key to cut this battery out of the transmitter circuit. When this battery is cut out, should it be in an open or a closed circuit? Which is the most injurious to a gravity cell, to be left in an open or a closed circuit?

Could you suggest an inexpensive way of testing grounded lines ten miles or less in length?

We have 180 telephones, mostly rural, on our lines. What would make a suitable office ground?

Gravity cells must never be left on open circuit. Arrange the key so that about 300 ohms will be left in circuit when the transmitter is cut out. It is necessary to have some current flowing all the time to keep the two liquids apart. From two to five milliamperes will be enough to keep the battery in good condition.

If the line is an individual one, that is if it has only one telephone, you can test for the ordinary troubles by using a series telephone or a series bell and generator. Get accustomed to the feeling of the generator when the line is normal. If it is open, the generator will turn freely. If the line is grounded, it will turn harder than usual. Good, small, portable voltmeters are so cheap nowadays that you should not be without one, for measuring line resistance and to detect leaks more accurately than can be done by a hand generator.

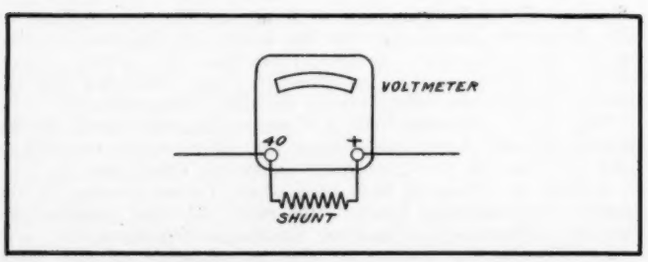
Have the resistance of the voltmeter rather low, say 200 to 500 ohms. If the voltmeter has high resistance, apply a shunt as shown in the sketch and that will bring it down. For instance, a 4,000-ohm voltmeter will require 210 ohms to reduce it to a 200-ohm instrument. If R = resistance of voltmeter, T = total resistance desired, and S = resistance of shunt, then

$$S = \frac{RT}{R-T} = \frac{4{,}000 \times 200}{4{,}000 - 200} = 210 \text{ ohms (approx.)}.$$

Proof: The joint resistance, $T = \frac{RS}{R+S} = \frac{4{,}000 \times 210}{4{,}000 + 210} = 200$

If the line is a party line, the use of a voltmeter is all the more essential. The resistance of the voltmeter should be about equal to the normal resistance of the line. Measure it up occasionally so that you know what to expect, then if an abnormal condition occurs (like a break or a partial ground) you will be able to detect it.

For your office ground, use all the grounds you can get. Rely mainly on a copper sheet having about four or five square



The Shunt Reduces Resistance of Voltmeter.

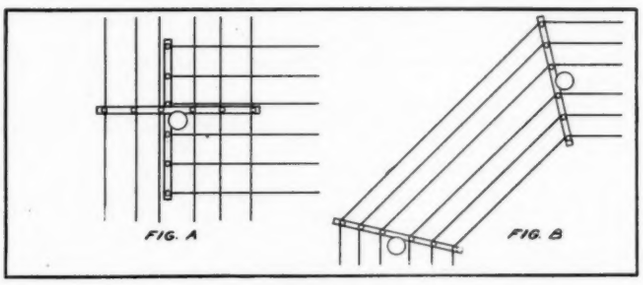
feet of surface on one side, surrounded by charcoal and buried in moist earth. The connecting wire soldered to it, should not be smaller than one No. 10 B. & S. copper wire.

"Neck" of Guy and Use of Buck Arms.

In "The American Electrician's Handbook," by Terrell Croft, Section No. 3, page 338, is shown in Fig. 20 the method of attaching guy to pole or stub. This specifies that the "neck" of the attachment should be in length, not less than the diameter of pole. Why?

Signal Corps Manual No. 3, revised to 1910, page 187, says: "The use of buck arms is not allowed under any circumstances." Why?

The "neck" of a splice or dead end of the twisted type, is the real holding part of the splice. The end turns, or close turns, merely form a backing to hold the ends of the neck or long spiral in place. Tests have shown that a splice made with a long neck is stronger than one having a short neck. Specifying the diameter of the pole as a measure is merely



"Buck Arm" and Proper Method of Making Turn.

a device to secure some measure of length which the lineman can see and with which he is familiar.

The term "buck arm" is sometimes applied to a cross arm placed immediately below and at right angles to another cross arm (Fig. A). It is a bad practice because if later other arms are placed below the buck arm and parallel to the top arm, the result will be a net work of wires through which a lineman will have difficulty in climbing and which become crossed with each other very easily. For cross country toll line work, buck arms should never be used. Every turn should be made on two poles (Fig. *B*) set close enough together to allow the wires to be a little slack without danger of crossing.

A Little Case of Trouble.

Approximately 4,000 telephones of the San Antonio Telephone Co., San Antonio, Texas, were thrown out of commission recently when a 60-gallon drum of crude Beaumont oil exploded in the new Brady building, the intense heat incident to the blaze melting away four feet of wire cable leading into the telephone office.

The drum was resting on the street floor of the telephone building, near the shaft opening where the cables lead into the building. While the flames did not reach the wires, the intense heat quickly melted them. The telephone company estimated that it wiuld take a week to repair the damage.

The heavy black clouds of smoke caused many to think the entire block was doomed and hundreds of people quickly congregated. Nine streams of water were used in extinguishing the blaze.

Spreading Telephone Directory Information Broadcast.

The Atlanta Constitution recently announced that for the benefit of the public it would publish, for four consecutive Sundays, on the first page of its classified advertising section, a classified list of the city's professional and business telephones. The subscribers of the Constitution number over 50,000, of which 28,000 have no telephones and seldom see a telephone book or city directory. It was thought that this published list would be useful to subscribers as a list to be filed away and used as a quick and ready refernce. It would also, it was declared, give an excellent conception of the magnitude of Atlanta's business world, her industrial, mercantile and professional life.

Practical Subjects—Letters and Discussions

Collections and the Manager.

It may be of interest to you to know that a little over two years ago the Central Home Telephone & Telegraph Co. of Kentucky and Southern Indiana adopted the policy of determining and rating all managers' *efficiency* by their ability to get the money.

We hold that if a manager collects 100 per cent. right along, all the time, that it demonstrates, beyond any question, he is on the job and attending to the company's business. He cannot collect 100 per cent. continuously without furnishing service, and it has been our experience that plants with 100 per cent. collections pick up more *new business* and operate more economically than the plants whose collections are below the standard of 100 per cent.

It is our practice to offer a prize to the district which finishes the half year ending June 30 with the highest average and to award a small prize to each plant which finishes the year with 100 per cent., or over, collected.

In our campaign just ended for the half year, the prize was taken by our eastern district with a general average of 101.89 per cent. and with all other districts trailing so closely that the combined averages were 99.45 per cent.

During the first six months of this year we were able to get some extraordinary results through the use of our circular letter proposition. That is, circular letters were written from this office from time to time encouraging and advising the managers, and near the end of our campaign we adopted the plan of getting each manager to write a letter to his employes setting forth his ideas as to how the campaign could best be conducted. We had a copy of each letter forwarded to our general office and we then made circular letters of them for all managers. There was a remarkable spirit of friendly rivalry stirred up and engendered through the use of these manager letters, and as a matter of fact it was surprising indeed, to note what excellent letters every one of them was able to write, as they showed a thorough knowledge of what they were trying to do and every one of them seemed to have a practical solution of the situation.

Our idea is that anybody can increase the subscription list provided you get out and spend a lot of money, but this is just what we do not want to do. All we are after is a normal, or something just a little above normal, growth and we want this growth to come through the efforts of our employes. We should like very much indeed to see some practical discussions in your valuable paper on this subject. In these strenuous campaigns, to get our managers and other employes thoroughly filled with "good red-blooded enthusiasm and earnestness," the many good articles and items which have been published in TELEPHONY have been a very great help.

Give us more of them as we have pledged ourselves to collect 100 per cent. for our entire system for the year 1914.

W. M. Brown, General Auditor,
Central Home Telephone & Telegraph Co.
Louisville, Ky.

Letters to His Old Boss.

Bessemer Hump.

My Dear Pinder:

I don't know where the idea originated, but tell the people back home for me that I am not in the mining stock business. The telephone business takes all my time. I have a bunch of letters from your town asking me to let them know when I can duplicate the Dobson investment. One check was enclosed from, I guess I won't say whom, for $300. That letter is the only one I have found time to answer. That I considered an urgent case for if it had become known here that I had that check to invest, I would have been pestered to death by hungry agents—not all sharks either. If I should turn that bunch of letters over to one of several brokers I know here, my commission on sales would be enough to be a temptation to almost anybody. I am surprised that Effiie's little flyer got so widely advertised for I know she isn't much of a talker about her own affairs.

If you conclude to incorporate I can furnish you with some information as to where there is money waiting to be invested. The rest will be up to you. Of one thing I am certain. The chances against sound investments in mines is a 50 to 1 shot as compared with stock in your company. I have had a dozen chances to trade my plant here for mining stock which has every prospect of paying out, but I would rather have something I can see.

You seem to be getting into more tangles with your rate committee than a lawyer can explain for some time to come. I am no authority, but you are welcome to my opinions. Besides I am interested in your experience because I may be up against the same proposition in a short time.

You say that in looking over your fixed charges they canceled the item of salary for yourself, on the ground that being the proprietor or owner, you must be satisfied with the earnings of your capital investment.

That doesn't appear to me to be a difficult point to settle. Before I go into the question I want to say a plain word to you.

It seems to me from the tone of your letters, and also as I remember you, you are at "swords points" with the committee. It is generally believed that commission regulation will work out for the benefit of both telephone man and user. At least we can't get around giving the plan a trial. In the spirit of fairness we should work with the commissions and not against them. I was up in Washington last month and was invited to be present at one of the sessions of a rate commission there. It was an ideal session and I am glad I was there. A stranger could scarcely have told which two men sitting at the table were interested in the telephone plant. There were no long-drawn arguments; just friendly, genial, but forceful discussions. Those two fellows are going to get a good fair rate because they helped to make it. I'm afraid you are at the other side of the roller, pushing back, but it's sure to go over you.

Now about your salary. There ought to be no argument about it. Suppose you had other interests and hired a manager to run your telephone business. His salary would be a fixed charge for which the rates should provide. It is the same idea that a man owning stock in a corporation should accept the dividends instead of a part or all of his salary. Upon your capital invested you are entitled to a reasonable return. Then again for your service you are entitled to a reasonable re-inbursement. Their argument that your efforts are directed toward making your investment pay a dividend does not hold in my estimation. If it does you had better leave your money out on mortgages and let the other fellow give his time to earning the interest.

As to who shall fix the amount or rate of your salary, is another question. Of course, they have general supervision over your expense account in order to know that telephone users are not paying an exorbitant rate. Suppose, for instance, your payroll showed your operators'

salaries 50 or 100 per cent. above what they should be. It is not to be expected, that as mediators they should overlook the point. Likewise if your own salary is beyond "rhyme and reason" they have the right to question it. Your salary, in my estimation, should be more than the rate you would pay a hired manager. It is, as I understand it, a principle of trade, to purchase labor or service at a price below its actual or earning value. If I hire a man at five dollars a day and he only earns that amount, it is a poor investment. In that case the $5 I invest pays me nothing as an investment. A certain percentage should be added to your payroll to provide for increases from time to time and supervision as well.

You have five men on the committee. You can be almost certain that three of them are reasonable and one of the other two will follow the leader's opinions very closely.

I still remember your squabble with John Benton when he claimed a three months' rebate. He didn't say "please," of course, but I still think that you could have settled with him more to your advantage if you had treated him the same as though he had acted more courteously, instead of calling him a "robber" the first thing. As it was you finally were forced to allow him half his claim, and pay your share of the arbitration fees. Besides that you lost four months' rental from his telephone as you had the service discontinued until the matter was settled. To this day you are selling service because you are forced to do so and he uses it for the same reason. In my opinion such relations are not at all satisfactory. I've thought of that Benton affair a great many times and it has been very useful to me as an example.

The real estate end of your controversy is interesting, but I haven't time to go into it just now. I find I can read case after case that have come before courts and commissions and many of them are at variance with each other. Men who have given much study and thought to the rate and valuation question cannot agree, so you and I cannot expect to solve the problem.

To overcome the uncertainty of doing an injustice on one hand or the other, rate fixing for short periods is an equitable recourse. Don't get the idea that the thing is all one-sided, for it isn't. Little Dudley.

Switchboard Operating Not Injurious to Eyesight.

As evening manager of one of the largest telephone exchanges in Chicago for four years I had an opportunity to study and observe the effects of telephone switchboard operating on employes' health, with particular reference to the eye, and have come to the definite, unbiased conclusion that they are not injured by such work, writes Le Roy Thompson, M. D., of Chicago, in the Bell Telephone News.

Where symptoms such as headache, insomnia, vertigo or other forms of nervousness appear, we found that it was due to some abnormality in the operator's eyes themselves, which would have given trouble had she been employed at any of the other ordinary girl occupations of today. The recovery was prompt when proper glasses were fitted by an oculist or treatment instituted where it was necessary.

As oculist and aurist for the Chicago Telephone Co. and chief physician for the Employes' Benefit Association for the past three years, having practically all cases of sickness among the employes come under my observation, I have been enabled to continue accurate investigation in occupational diseases or physical strain which was begun while actively associated as manager.

Before a girl is taken into the employ of the Telephone company she is given a physical examination and her eyes are examined as far as practical vision is concerned. Of course this keeps out many who would otherwise succumb to eye trouble of one kind or another, but it is impossible to eliminate everyone who suffers only a slight abnormality. I think the efficiency of such an examination is aptly illustrated by what I saw on a visit to an exchange the other day. One group of 27 girls, all active, healthy looking specimens of young womanhood, and not one was wearing glasses. Another group of 19 and only three were wearing glasses. Go into any large office and look over the clerical force, and you will be astonished at the number who are forced to seek the assistance of glasses in their work.

The telephone operator sits facing the switchboard, with her face approximately 16 inches away, measurement taken at the level of the eye. The maximum distance at which she uses her eyes when reaching to complete a call or pick it up is 29 inches. When answering a call or completing a connection she uses her focusing eye muscle only three to five times and never twice at the same distance consecutively.

This point cannot be emphasized too strongly, as the varying distance, even though not far enough for complete relaxation to take place, is nevertheless enough change to rest the eye much more than many other occupations.

The signal lamps, the strongest of which is less than one candle power, have a protecting cover, or opal as it is called, made of glass which is semi-transparent. They measure nine millimeters across at their greatest diameter and six millimeters thick, being made in three colors, white, red and green. These opals amply protect the eye from ultra-violet or chemical rays. Heat, of course, is not a factor worth consideration from so small an amperage and candle power.

Telephone operators are not subjected to as much eye strain as the average clerk. Conditions which are apt to be blamed on the occupation have been absolutely proven to clear up after the eye condition was treated and glasses fitted where necessary, the operator continuing at the same occupation under exactly the same working conditions as before.

Mutual Company Reform.

The Andrew County Mutual Telephone Co., of Missouri, has undertaken a local campaign of publicity in connection with a program of revision of business methods designed to place it on a firm basis with the public. In its first statement in the Savannah, Mo., Reporter, the company said:

Believing that it is due the stockholders of the company, and also its patrons, to be fully informed along certain lines, and that this information will work to the good of the company, there will be as time permits, placed before the public through the columns of this paper, conditions that affect the welfare of this company.

The directors realize the responsibility that is placed upon them in the successful management of the company, and appreciate the confidence of the stockholders in placing them as custodians of so valuable a property, and they consider it their duty to guard its interests under any and all circumstances.

The past record of the mutual telephone companies of the country is not an enviable one. They have been ridiculed and condemned, and considered the legitimate prey of both the Bell and the Independent companies. But the above has not injured them so much as it has created internal discontent.

The lack of information is largely responsible for this and also for the suspicious attitude that often prevails toward the officers of the company. It might be well to state here that the books, records and every thing pertaining to the interest of the company are open at all times to the inspection of the stockholders, and you are invited to avail yourselves of this means of information.

Recent enactment of laws both national and state governing telephone companies effect every company, no matter how large or small and will compel them to revise their methods of doing business. The Andrew County Mutual Telephone Co. will have to change some of the rules of the past that will materially affect it and it is due the stockholders that they be informed in advance of these changes.

From Factory and Salesroom

Convention: Indiana Independent Telephone Association, Indianapolis, Sept. 16, 17

A Quarter Century of Nungesser Dry Batteries.

On the present occasion of the turning of the quarter-century mark in the history of the use of commercial successful dry batteries, Philip P. Nungesser, general superintendent of the Nungesser Carbon & Battery Co., of Cleveland, Ohio, comments in an interesting way upon the development of this business. He declares that although telephone men told him frankly that he was crazy when he first talked dry batteries to them, that it has been the telephone business that has made the dry battery business possible. On September 7, 1889, he made and sold a dozen dry cells for $9, or 75 cents apiece. These are declared to have been the first commercially successful dry batteries sold in the United States, although Mr. Nungesser had, prior to this date, made innumerable experimental batteries before perfecting any.

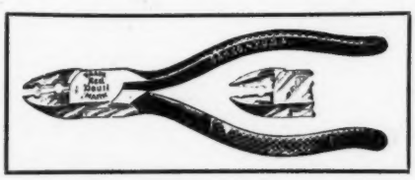
Philip P. Nungesser.

In those days—25 years ago—the market was limited, the only possible uses for dry cells being for door bells, burglar alarms, fire alarms, etc. Then the telephone business came along, and although telephone men were at first extremely skeptical, dry cells replaced the old wet batteries in the telephone business. In referring to his 1900 batteries Mr. Nungesser says that the thing that means more to him than anything else in his business experience is the general feeling throughout the telephone trade—both manufacturers and exchanges, that Nungesser batteries have stood up under the test of time.

A New Wire Stripping Plier.

A new tool of interest to electricians, is the wire stripping plier that has been added to the extensive "Red Devil" family. This is for use on cloth or silk covered wires of fine gauge such as Nos. 18, 20 and 22.

As can be seen from the accompanying illustration, the new stripping plier is modeled along the lines of the popular electrician's diagonal plier and the stripping feature has been placed in the cutting edges in such a position as not to interfere with wire cutting. The new tool has hand honed cutting and stripping edges and is packed with the regular two year insurance bond that accompanies all Red Devil "bonded" tools.



A New "Red Devil" Stripping Plier.

The new tool is known as No. 1742 and further information concerning it may be secured from the manufacturers, Smith & Hemenway Co., Inc., 150-152 Chambers Street, New York City.

U. S. L. Management and Staff Retained.

In the United States District Court at Buffalo, N. Y., on July 21, Judge Hazel appointed James O. Moore and James A. Roberts, receivers for the U. S. Light & Heating Co. following a case in equity. That it was a case in equity and not in bankruptcy was made evident in the hearing. It was clearly outlined by the court that there should be no interruption in the fulfillment of existing contracts, in the prosecution of pending business or in the company's operations in any department.

A. H. Ackermann, vice-president and general manager prior to the receivership, was immediately appointed general manager to operate the business because of his familiarity with it, and the entire staff of salesmen, engineers, etc., was retained in their former capacities. Mr. Ackermann has issued the following statement to the trade and to the public:

"The action recently sustained in the appointment of the receivers for the property of the company was a necessary step to conserve the assets for the benefit of all. With assets of three dollars for every dollar of debt, the company is amply stable, and the court's direction to continue the business is the last proof necessary to reassure the buying public. There are already under way plans for broad financing, and with the return of general prosperity in the country, the U. S. L., more aggressive than ever before, intends to secure its own full share of the business and to continue the manufacture and sale of its special electrical products."

Columbus Office of Naugh Pole & Tire Co.

Laurence E. Morier has been placed in charge of the new office which the Naugle Pole & Tie Co., of Chicago, has opened at 21 South High Street, Columbus, Ohio. Mr. Morier has been affiliated with the company for the past nine years, having started in the capacity of timekeeper and assistant foreman in the Chicago yards. After three years of this work he was transferred to the North, acting as assistant to the superintendent of Minnesota operations. He was later recalled to Chicago and made a salesman as his business capabilities were lost to a certain degree in his former occupation. His practical experience in all branches of the pole business fitted him particularly well for his new work, and his efforts along this line were so successful that the company decided to open an eastern sales office in Columbus and place him in charge.

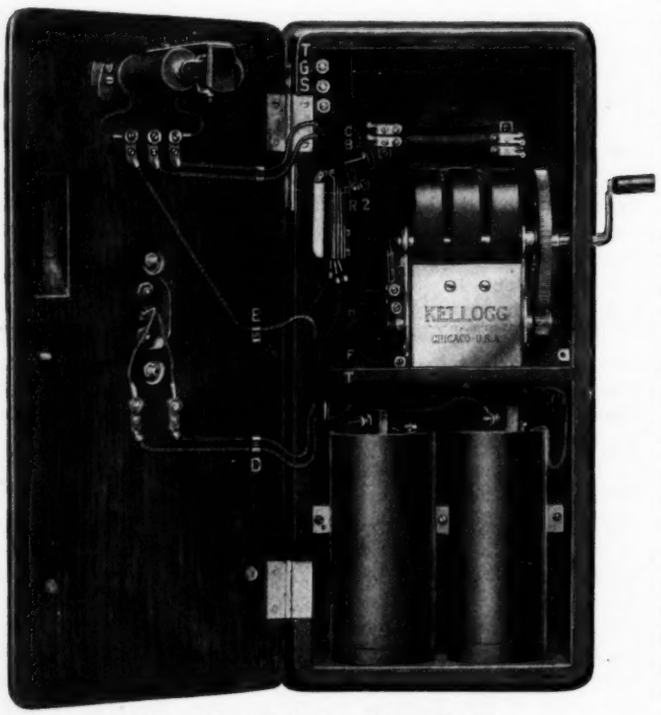
L. E. Morier.

The office has been opened because of the desire of the Naugle Pole & Tie Co. to give its customers for poles, posts, ties and piling a little more personal attention than it could from the main office at Chicago.

New Greenfield, Indiana, Exchange.

By B. H. Blake.

The S. Morrison Telephone Co., of Greenfield, Ind., has just contracted for a new common battery switchboard for its Greenfield office, which will have all of the latest modern features to insure the best of service. This contract was placed with the Kellogg Switchboard & Supply Co. after several weeks of investigation of various types of equipment.



Interior View of Kellogg Harmonic Set.

The equipment consists of a 700-line board of six operators' positions, a wire chief and chief operator's desk, and duplicate power plant equipment. All of the late improvements, which have been recently brought out by the Kellogg company, commonly known as the automatic recall system, will be employed. These new features consist of the following: Multiple line lamps; instantaneous disconnect and recall; secret service; automatic ringing; automatic peg account; and automatic listening.

The multiple line lamp arrangement places a call before every operator instead of before just one operator, as has been the practice in the past. This practically means a load distribution inasmuch that each operator has access to any call appearing on the board, and the idle operator will take it. Arrangements are made whereby two operators cannot answer the same subscriber. The minute one operator takes the call, all the other multiple jacks of that line are cut out, so that any of the other operators going in on the line can not talk to the subscriber. Series contacts are not employed in the jacks to accomplish this result.

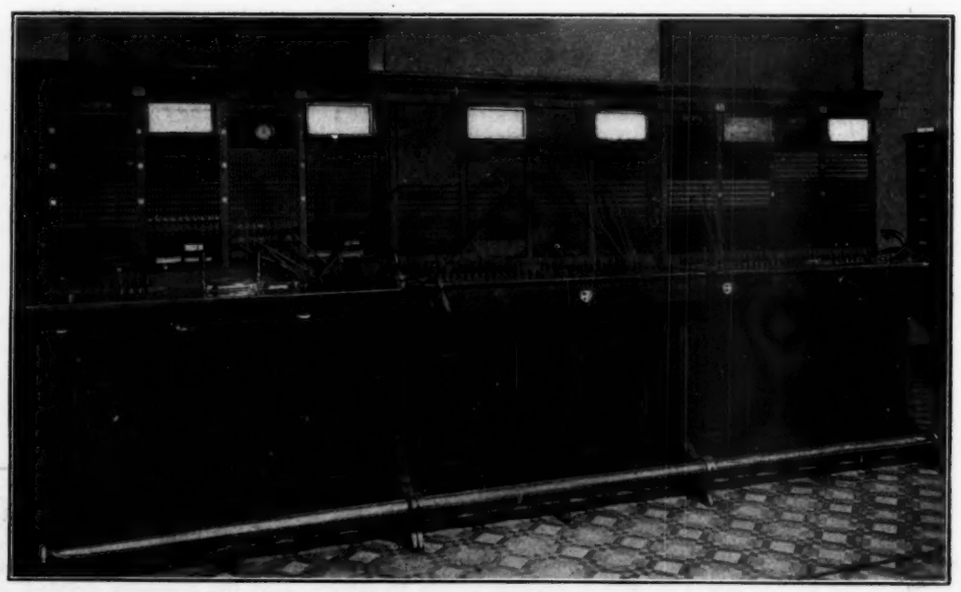
The instantaneous recall and disconnect are new features that insure a subscriber getting the operator after a connection has been established. In the former type of boards, the subscriber had to depend on the operator seeing the cord lamp flash. With the new method, when the subscriber "flashes" his hook, the line lamp appears the same as in an original call. This does away with the term "recall" as every call is the same as the first one. The instantaneous disconnect feature prevents the old trouble of an operator reporting a line busy when another operator has not had time to take down a connection after the parties have hung up. After a subscriber has hung up his receiver, the cord circuit which is connected with that jack is opened, thus leaving the line clear for any of the operators to connect with. As a result, during the busy hour, the line will not be out of service due to an operator not having time to take down the connections.

The secret service feature insures the subscriber of absolutely secret service. The board is so arranged that when a connection is established, all other multiple jacks are cut out, so that going in and listening to the conversation is impossible for any of the operators.

Automatic ringing speeds up the subscriber to answer the telephone, and in this way cuts down the cord time, and also improves the service. In addition considerable work is taken from the operator, as she merely sets the key and devotes her time to answering other calls. The bell of the called telephone rings until the party answers or the calling party hangs up when the ringing current is automatically cut off.

The automatic peg account is a means of checking the traffic, and enables the chief operator to determine which are the best operators. In the old system, one operator might answer more calls than another but that did not mean that she was the better of the two. It probably meant that she had more calls appear on her board. With the new multiple line lamp scheme, which gives every operator access to any call, the operator answering the greater number of calls is without a doubt the best one.

In order to determine how many calls each girl handles, the automatic meter is brought into use. This meter is so designed that it automatically registers when the connection is completed and the operator sets the ringing key. It is then cut out of circuit, so that an operator cannot force it to register calls to which she is not entitled. When this system is employed, a telephone company can speed up its service by offering a bonus to the operator who answers the most calls in a given period of time.



Type of Switchboard to be Provided for the Greenfield, Ind., Exchange.

The automatic listening feature does away with the listening

key. When the operator plugs in a jack with the answering cord, it automatically cuts in her operator set, and when the calling plug is inserted in the jack of the desired line, it cuts out her telephone set.

Harmonic party line service will be another feature of the new system, which will be a great benefactor to the company, as it will save it considerable outside construction.

The telephone company is very anxious to get the switchboard installed and cut over made as it is handicapped with a board that has been in operation for the past 14 years, and is not large enough for its present needs.

J. T. Detchon is the owner of the Greenfield plant. He also has several other systems in Indiana, the largest being in Attica. He makes his home at New Richmond, where he is interested in a large grain elevator. W. C. McCrea is the local manager of the Greenfield plant.

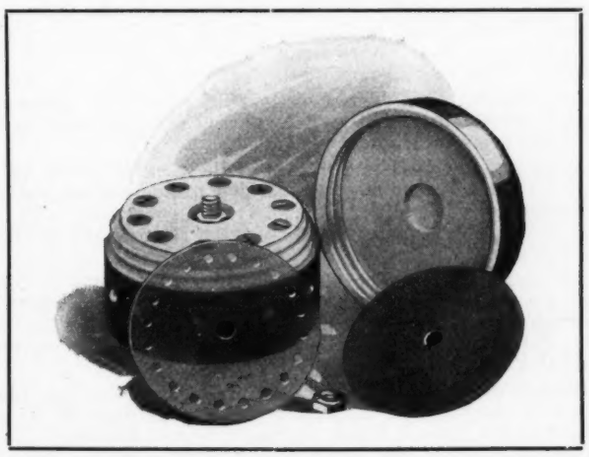
The old building will be remodeled to accomodate the new equipment, and when the installation is completed, the company will have one of the most modern central offices in the state.

A Sermon in Slang.

McRoy Clay Works, Chicago, on its August blotter calendar reverts to the use of slang in an effective preachment which reads: "In this here mundane sphere of ours, we meet all sorts of guys; some tread midst richly laden bowers, and some on railroad ties. One man may make a lot of dough, the while his next door neighbors, who toil as hard, may never know a meed for all their labors. So let us never pan a man who hasn't had success; remember panning hardly can alleviate distress. Instead of knocking with your mace, it would be far better if you would use, to take its place, a word of sympathy. Now, this you'll call a gushing bit of preaching, lacking power. But I should fret as long as it will land me in the Tower!"

The Cox Multiple Lightning Arrester.

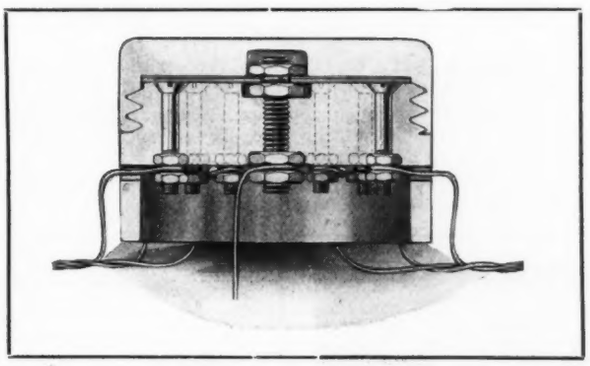
C. E. Cox, who has been manager of the Eaton Telephone Co., of Eaton, Ohio, for 13 years, is now placing upon the market the Cox Multiple Lightning Arrester, a device of his own invention which he has submitted to thorough practical tests during the past two years. During this time he has been using the arrester for cable and instrument protection during electrical storms and declares that it gives perfect protection for long rural lines that come in through cable. The



Cox Multiple Arrester With Cover Removed.

company has 800 rural telephones on lines ranging from five to 15 miles, which provides an ample test.

The Cox Multiple Lightning Arrester, which is shown in the accompanying illustrations, is very simple and is capable of taking care of 10 lines from one pole during an electrical storm. The instrument is small and is made of hard-burned, glazed porcelain with a screw top cover as shown. Into this cup the lines are conveyed and connect with screws embedded in a common plate, through the center of which, and insulated therefrom, is a main screw connected with the ground



Sectional View of Cox Arrester.

wire. Over the common screw plate is placed a mica plate perforated with holes to form an air gap and on top of this is placed a ground plate which is fastened to the center ground screw by means of a nut.

This is an inexpensive arrester which, it is declared, meets every requirement for the service intended. Mr. Cox had his models and drawings all ready for the manufacturer when the flood of 1913 swept the factory away and with it his plans, necessitating an entirely new set when the plant was again put in operation. He expects to handle the sale of the device through electrical jobbers and already is receiving a larger number of orders for the device.

Paragraphs.

B. F. Sturtevant Co., Hyde Park, Boston, Mass., has issued an interesting booklet entitled "A Cooler Booth," which describes the Sturtevant telephone booth ventilator and shows its appearance when installed and also its component parts. It is declared that this ventilator floods the booth with cool, refreshing air and removes disagreeable odors and smoke.

Stromberg-Carlson Telephone Mfg. Co., Chicago, Ill., has issued Bulletin No. 1007, describing and illustrating its "Central Energy" cordless switchboards. One of the cordless switchboards shown can be wired and equipped for magneto service. Either a combination telephone, desk telephone or operator's breastplate can be furnished with these switchboards, although the combination set is standard. The bulletin shows in an interesting way the utility of the cordless switchboards for small private systems.

Record Net Earnings of Pacific Telephone Company.

The net earnings of the Pacific Telephone & Telegraph Co. for 1914 will break a record if they continue at the rate for the first six months. The earnings available for dividends for the first half of the year were $1,207,010, an increase of 11.8 per cent. over the corresponding period of 1913. Fair comparative gains were made both in gross and in the number of stations in operation. The gross for the six months amounted to $9,441,240, an increase of $433,756 or 4.8 per cent. The number of total stations was 666,484, an increase of 50,490 or 8.2 per cent.

The relatively large increase in net compared with gross has been a feature of Pacific Telephone's operations for some time. For the $18,000,000 common stock the foregoing figures indicate earnings for the full year of about 2.7 per cent. The $83,000,000 5 per cent. bonds sold last fall to Boston bankers do not involve an increase in charges, as they were issued to refund a like amount of Sunset Telephone 5s.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

C. G. FOYE, of Steele, N. D., will take over the management of the Cleveland Telephone Co., Cleveland, N. D.

T. MCCULLOUGH has been appointed manager for the Martin Telephone Co., at Johnson City, Texas, succeeding M. J. Perry.

GANSEY R. JOHNSTON, of Columbus, Ohio, who has been general manager of the United States Telephone Co., the Columbus Citizens Telephone Co., the Dayton Home Telephone Co., and other companies, was on August 1 made assistant to the president of the Ohio State Telephone Co., the new consolidated organization of Independent telephone companies in Ohio. In announcing this appointment, President S. G. McMeen says: "In general his duties will be a continuance of the work he has had in charge in the past and also will have to do with the larger features of the extension program now beginning. It is asked that all co-operate with him in every helpful way possible. For the present, it will be largely through Mr. Johnston that I will communicate with the local parts of the organization."

Gansey R. Johnston.

Mr. Johnston was born at Richmond, Ind., on April 22, 1873. He was in the service of the Pennsylvania Railroad Company's lines up to 1899, and was later secretary and auditor of various American District Telegraph companies, associated with the Western Union Telegraph Co. until 1905. He entered the telephone field in June, 1905, as general manager of the Columbus Citizens Telephone Co. He was given the general management of the United States Telephone Co. and others in February, 1910. Mr. Johnston is widely known in the Independent telephone field through his activities in connection with the work of both state and national associations. He has also been a contributor to TELEPHONY.

B. H. BROOKS, who has been chief engineer of the United States Telephone Co. and associated companies, has been appointed chief engineer of the Ohio State Telephone Co.

A. F. SCHOUBOE, of Hastings, Neb., who has been collector and office man for the Lincoln Telegraph & Telephone Co., at Hastings, has been made the commercial manager of the telephone office at Superior.

CHESTER B. GOOLRICK, of Fredericksburg, Va., has been appointed manager of the Chesapeake & Potomac Telephone Co. He succeeds M. T. Gaulding who has been promoted to a place with the company in Norfolk.

A. J. MELLEN, district manager for the Central Union Telephone Co., at Toledo, Ohio, has announced the following changes in managers: A. C. Arend has been promoted to manager at Springfield, Ohio, succeeding Major R. B. Hoover who automatically retires on a pension under the Bell company's pension system. F. M. Staples will succeed Mr. Arend as manager at Findlay and North Baltimore.

Obituary.

J. B. SHELDON, superintendent of telegraph for the Union Pacific Railroad, Omaha, Neb., died in that city, July 29, as a result of an operation. Mr. Sheldon was a native of Canada and was appointed superintendent of telegraph of the Union Pacific, May 6, 1908. He was one of the most progressive railroad telegraph superintendents and was president of the Association of Railway Telegraph Superintendents during 1912-13.

New Companies.

SEDAN, MONT.—The East Flathead Telephone Co., has been incorporated with $5,000 capital stock by J. L. Francis, O. J. DeFields, and H. R. Riechman, all of Sedan.

HEMPHILL, TEXAS.—The organization of the Sabine Citizens Telephone Co. was perfected recently at a largely attended meeting of residents of the country. A modern telephone plant will be installed with lines reaching to all communities. The capital stock is $5,000, which is divided into 200 shares.

NATURAL BRIDGE, VA.—The Natural Bridge Mutual Telephone Co., has been organized with a maximum capital stock of $5,000. The incorporators are as follows: Kent Peery, president, W. E. L. Stark, Jno. W. Burger, J. L. Hannah and G. W. Parsons, all of Natural Bridge. R. G. Paxton, of Glasgow, Va., is secretary and treasurer.

SPOKANE, WASH.—Articles of incorporation have been filed by the Farmers' Inland Co., which names its principal place of business as Melrose, Idaho. The capital stock is $2,000. The officers and incorporators are as follows: C. J. McConnell, president; H. R. Croson, secretary; Lee Lucas, S. S. Sardam, George L. Johnson, and E. F. Stamper.

STRATFORD, WIS.—The Big Eau Plaine River Telephone Co. has incorporated with $1,000 capital stock to maintain a telephone line. Incorporators are the following: Michael Sinnolke, John F. Kroening, Walter R. Howe, Andrew Sinnolke and Louis Youkons.

Construction.

PORT ORANGE, FLA.—The Port Orange Telephone Co. has been organized and construction work will be started this fall. It will cover Port Orange, and Wilbur, and will connect with Deland, Daytona, Ormond, New Symerna and other nearby points in Florida.

ELGIN, ILL.—Plans to improve the long distance telephone facilities in Elgin, involving an expenditure of approximately $20,000, have been prepared by the Chicago Telephone Co. It is also the plan of the company to place new cables underground.

GILLESPIE, ILL.—The reconstruction of the Gillespie Home telephone plant was begun recently. The plans provide for the expenditure of $25,000. The company will erect a new building, install a central energy plant, a multiple cable system and a new switchboard sufficient to care for 1,200 patrons. C. B. Cheadle, of Joliet, is secretary of the company.

JOLIET, ILL.—The Chicago Telephone Co. will expend $30,000 to enlarge and improve switchboard facilities in the Joliet exchange. Service will be improved both locally and on the long distance calls by a re-arrangement of facilities and the additions to the switchboard of the local exchange.

INDIANAPOLIS, IND.—The Chicago Telephone Co. plans to expend $25,000 for additional local and long distance telephone facilities in Hammond, Ind.

DAVENPORT, IOWA.—The directors of the Central Union Telephone Co., at a recent meeting, decided to appropriate $88,000 to connect Rock Island and Davenport by a submarine cable instead of the cables now carried across the river on the government bridge.

LIVINGSTON, MONT.—The Mountain States Telephone & Telegraph Co. will invest $100,000 on improvements in Livingston and Park county. Not only this city but patrons in the Shields River Valley and Upper Yellowstone Valley and Yellowstone National Park, are to be greatly benefited.

NEWARK, N. J.—The New York Telephone Co. has filed plans with the building department for the construction of an addition to the Branch Brook exchange, to cost $80,000.

CLEVELAND, OHIO.—The Cleveland Telephone Co. expects to spend $1,000,000 on improvements this year. Approximately $400,000 will be spent to increase its underground facilities and to improve aerial lines outside the main business district. More than $900,000 will be invested in telephone buildings. The underground system will be extended in those portions of the city served by the Ridge and Broad exchanges.

PORTLAND, ORE.—The Pacific Telephone & Telegraph Co. is